

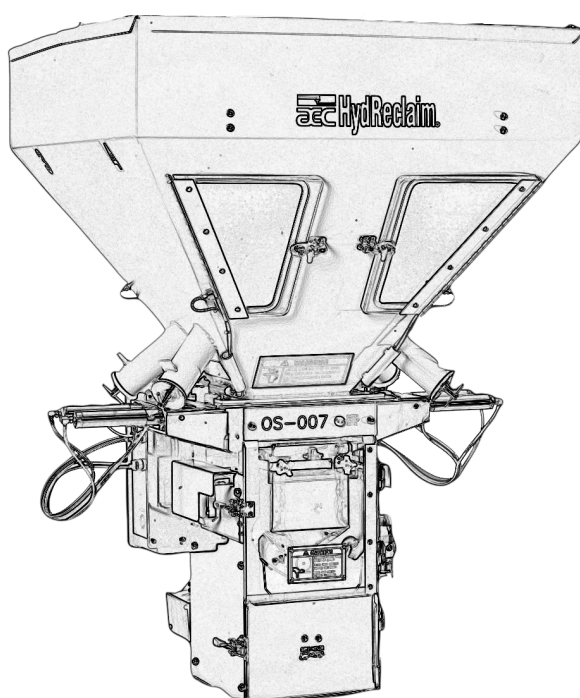


OS/OA Series

Gravimetric Batch Blenders

(Standard & CE Models)

Operation, Installation and Service Manual



AEC/HydReclaim, Inc.
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www.aecinternet.com



Please note that our address and phone information has changed. Please reference this page for updated contact information.



These manuals are obsolete and are provided only for their technical information, data and capacities. Portions of these manuals detailing procedures or precautions in the operation, inspection, maintenance and repair of the products may be inadequate, inaccurate, and/or incomplete and shouldn't be relied upon. Please contact the ACS Group for more current information about these manuals and their warnings and precautions.

Parts and Service Department

The ACS Customer Service Group will provide your company with genuine OEM quality parts manufactured to engineering design specifications, which will maximize your equipment's performance and efficiency. To assist in expediting your phone or fax order, please have the model and serial number of your unit when you contact us. A customer replacement parts list is included in this manual for your convenience. ACS welcomes inquiries on all your parts needs and is dedicated to providing excellent customer service.

For immediate assistance, please contact:

- North, Central and South America, 8am – 5pm CST +1 (800) 483-3919 for drying, conveying, heating and cooling and automation. For size reduction: +1 (800) 229-2919.
North America, emergencies after 5pm CST (847) 439-5855
North America email: acsuscanadacustserv@corpemail.com
- Mexico, Central & South America
Email: acslatinamericacustserv@corpemail.com
- Europe, Middle East & Africa +48 22 390 9720
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Let us install your system. The Contract Department offers any or all of these services: project planning; system packages including drawings; equipment, labor, and construction materials; and union or non-union installations.

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ACS offers facilities around the world to service you no matter where you are located. For more information, please visit us at www.acscorporate.com

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Fax: + 91 20 40147576

	<u>Model #</u>	<u>Serial #</u>
<i>Write down your Blender</i>	_____	_____
<i>serial numbers here</i>	_____	_____
<i>for future reference</i>	_____	_____
	_____	_____
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AEC/HydReclaim is committed to a continuing program of product improvement. Specifications, appearance, and dimensions described in this manual are subject to change without notice.

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Safety Considerations

AEC equipment is designed to provide safe and reliable operation when installed and operated within design specifications, following national and local safety codes.

To avoid possible personal injury or equipment damage when installing, operating, or maintaining this equipment, use good judgment and follow these safe practices:

- ☑ Follow all **SAFETY CODES**.
- ☑ Wear **SAFETY GLASSES** and **WORK GLOVES**.
- ☑ Disconnect and/or lock out power before servicing or maintaining the blender.
- ☑ Use care when **LOADING, UNLOADING, RIGGING, or MOVING** this equipment.
- ☑ Operate this equipment within design specifications.
- ☑ **UNPLUG OR OPEN, TAG, and LOCK ALL DISCONNECT DEVICES** before working on equipment. You should remove the fuses and carry them with you.
- ☑ **GROUND** your equipment properly before applying power.
- ☑ Use extreme caution when working with your equipment. Keep body parts, tools, clothing, and debris away from vacuum inlets and moving parts.
- ☑ Do not jump or bypass any electrical safety components.
- ☑ Do not restore power until you remove all tools, test equipment, etc., and the blender and related equipment are fully reassembled.
- ☑ Only **PROPERLY TRAINED** personnel familiar with the information in this manual should work on this equipment.

AEC/HydReclaim

“OS-E” Series Blenders

This blender is manufactured by ACS, Inc. at the ACS-Wood Dale facility:

ACS, Inc.
801 AEC Drive
Wood Dale, IL 60191

Phone: 630.595.1060
Fax: 630.595.6641

The equipment is distributed in Europe by our European facility:

ACS-EUROPE
Daniels Industrial Estate
BATH ROAD
Stroud, Gloucestershire, England
GL5 3TJ

Phone: (44) 1453 768980
Fax: (44) 1453 768990

Annex B Information

The following design information is provided for your reference:

1. No modifications are allowed to this equipment that could alter the CE compliance
2. Ambient temperature: 40 degrees Celsius – Maximum (104 degrees Fahrenheit)
3. Humidity range: 50% relative humidity
4. Altitude: Sea level
5. Environment: Clean, dust-free and non-explosive
6. Radiation: None
7. Vibration: Minimal, i.e. machine mounting
8. Special installation requirements: Clean, dry compressed air 1 cfm @ 60 psi (1.7 m³/hr @ 4.14 bar)
9. Allowable voltage fluctuation: +/- 10%
10. Allowable frequency fluctuation: Continuous +/- 1%
Intermittent +/- 2%
11. The addition of an auger feeder (RAM option) for regrind will increase the electrical supply requirements of a standard blender.
12. Nominal supply voltage: 120/1/60 or 220/1/50/60 (Verify on serial number tag)
13. Earth ground type: TN (system has one point directly earthed through a protective conductor)
14. Power supply should include a neutral power connection.
15. Over-current protection is supplied in the blender, but additional protection should be supplied by the user.
16. The plug on the power cord serves as the electrical disconnect device.
17. Unit is not equipped with three-phase motors.
18. N/A
19. Blender is not equipped with local lighting.
20. Functional identification
21. Blender is equipped with a CE mark
22. Blender is supplied with an operating manual in the language of the destination country.
23. Cable support may be required for power cord, depending on final installation.
24. No one is required to be in the interior of the electrical enclosure during the normal operation of the unit. Only skilled electricians should be inside the enclosure for maintenance.
25. Doors can be opened with a screwdriver, but no keys are required.
26. Two-hand control is not required or provided.
27. All blenders should be moved around and set in a place with a lift truck or equivalent.
28. There are no frequent repetitive cycles that require manual control—repetitive functions are automatic while the blender is operating.
29. An inspection report detailing the functional test is included with the blender.
30. The machine is not equipped with cableless controls.
31. Color-coded (harmonized) power cord is sufficient for proper installation.

1-1 Introduction

We are pleased to supply AEC auxiliary equipment for your facility. We manufacture a complete line of auxiliary equipment to satisfy all of your material handling, process cooling, scrap reclaim, size reduction, and automation requirements. Please feel free to contact your sales representative or our office if you have any questions.

1-2 Equipment Function

All OS/OA blenders are designed to blend plastic pellets and regrind, and supply the blended material to the processing machine. Standard equipment is not designed to blend powder or any other materials.

1-3 Accessories

AEC/HydReclaim offers a variety of standard options for blenders including floor stands, RAM feeders, loading equipment, etc. All accessories are designed and manufactured by AEC, Inc. to ensure proper results for your application.

1-4 Customer Service

The intent of this manual is to familiarize the operator and maintenance personnel with this equipment and help your organization get the maximum service from your equipment. If you have any questions regarding installation, service, repair, custom equipment, or applications, please do not hesitate to contact us for the information required. Prices for additional equipment, accessories, or repair parts will be furnished promptly upon request.

NOTICE: If you desire to use a blender for an application other than that for which it was purchased, please contact your sales representative or our factory to verify compatibility of the equipment with the new process. Misapplication of the equipment could result in injury to the operator or damage to the equipment.

1-5 Necessary Documents

The documents listed below are necessary for proper installation, operation and maintenance of OS/OA Series Gravimetric Batch Blenders. You can obtain additional copies from the AEC/HydReclaim Service Department at AEC, Inc or ACS Europe.

Make sure that appropriate personnel get familiar with these documents:

- This Operation, Installation, and Service manual
- Electrical schematic and connection diagrams
- Pneumatic circuit drawing
- Electric motor and controller information sheets (if equipped)
- Operation and Installation manuals for supplied options and accessories

1-6 System Capabilities

Blending systems are as varied as the applications that they service. This equipment is intended to blend the materials(s) specified at the time of purchase at specific rates.

1-7 Equipment Covered by this Manual

OS Blenders

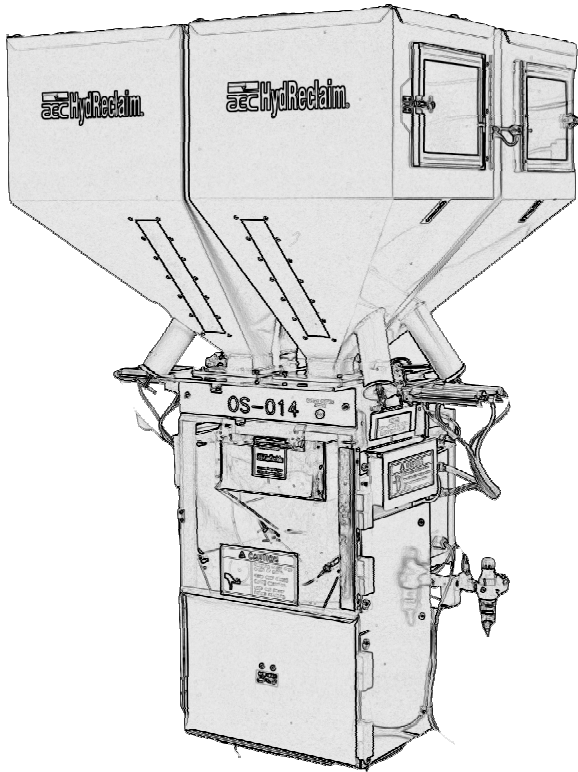
- OS-007(E)
- OS-014(E)
- OS-030(E)
- OS-070(E)
- OS-080(E)
- OS-100(E)

OA Blenders

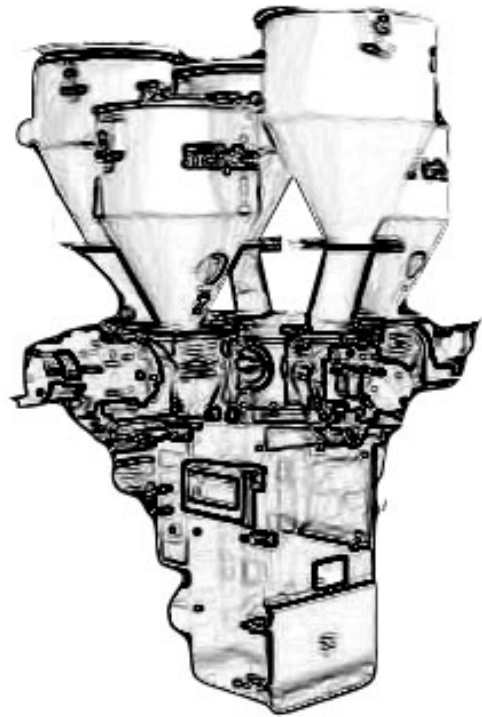
- OA-002(E)
- OA-012(E)
- OA-030(E)
- OA-060(E)

**Note: (E) Denotes “CE” models, including 220/1/50
Operation and CE mark**

1-8 “OS” Series Weigh Blender Mechanical Features



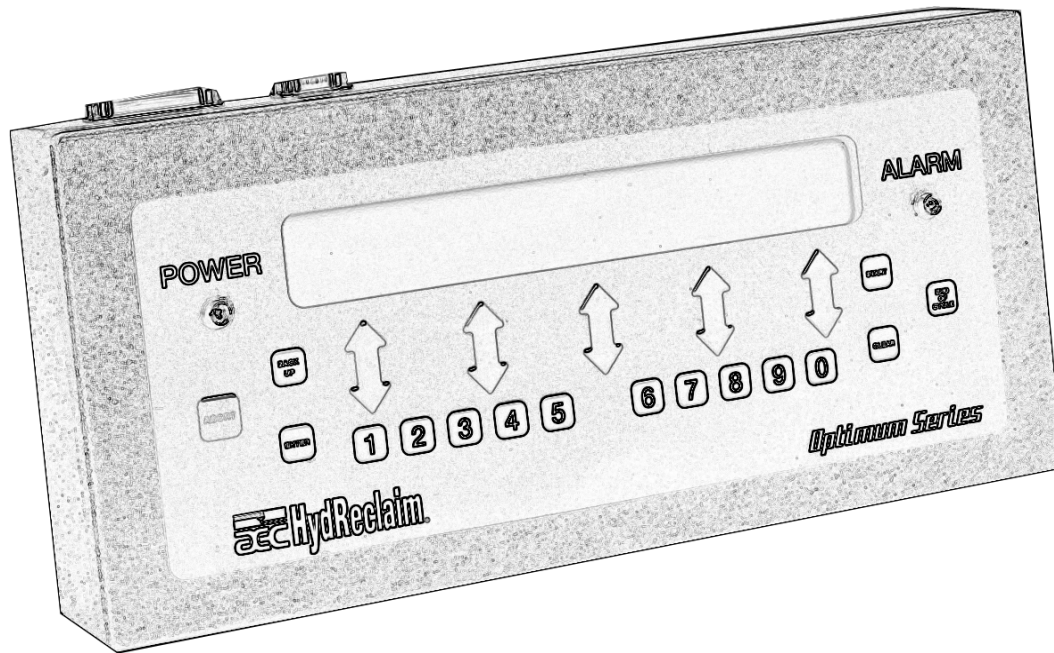
OS Slide Gate Blender



OA Auger Blender

- Efficient Opti-Mixer® and “HC” mixer designs promote homogeneity
- Exclusive diamond design slide gate metering assemblies meter a large range for free flowing pellet materials (OS Series)
- Slide gate stroke limiting restrictors provided for accurate metering of minor ingredients (OS Series)
- Precision auger metering (standard on OA Series, optional on OS)
- Electro-polished 304 SS stainless steel weighing and blending components
- Precision 1/10% span accurate cantilever load cell weighing system
- Removable stainless steel weigh hopper
- Removable stainless steel mixer agitator and mixer wrap
- Mild steel material supply hoppers with clean-out doors and material drains
- Compressed air hose with nozzle for clean-out
- Safety-interlocked system shuts off compressed air and electricity if mixer is opened

1-9 “OS” Series Weigh Blender Control Features



- LCD display operator control panel with two line display and 10' cable
- Target vs. actual set point verification
- Inventory accumulation for all ingredients
- Audible alarm
- Auxiliary alarm contact
- 100 recipe storage book
- *Three (3) types of recipe entry procedures available:*
 - ✓ **EZ mode** (up to 6-component) recipe entry. Color and additives are metered as a percentage of the virgin material.
 - ✓ **Percentage mode** recipe entry. Ingredients are metered as a percentage of the overall batch.
 - ✓ **Parts mode** recipe entry (i.e. 500:1) Ingredients are metered as a ratio to each other within the batch
- Full control diagnostics
- Parallel printer and RS-485 communications ports

1-10 OS (-E) Series Specifications

OS Series Specifications	OS-007	OS-014	OS-030	OS-070	OS-080	OS-100
Number of materials blended	4	2 to 6	2 to 6	2 to 6	2 to 6	2 to 5
Slide gate (adjustable, in (mm)) square	2 (50)	2 (50)	2.5 (63)	3 (76)	3 (76)	4 (101)
Supply hopper capacity, ft ³ (l)	0.75 (21)	2 (56)	3 (85)	3.9 (110)	3.9 (110)	3.9 (110)
Weigh hopper capacity ft ³ (l)	0.12 (3.4)	0.4 (11)	0.65 (18)	1.4 (39)	1.4 (39)	1.4 (39)
Typical batch size, lbs. (kg)	3 (1.3)	8 (3.6)	15 (6.8)	35 (16)	35 (16)	35 (16)
Mixer capacity, lbs. (kg)	6 (2.7)	20 (9)	30 (13.6)	75 (34)	75 (34)	75 (34)
Mixer motor size, HP (kW)	1/6 (.12)	1/6 (.12)	1/2 (.37)	1/2 (.37)	1/2 (.37)	1/2 (.37)
Mixer speed, rpm	30	16	22	22	22	22
Load cell capacity (2 per blender)	2 kg ea.	5 kg ea.	10 kg ea.	20 kg ea.	20 kg ea.	20 kg ea.
Blended material discharge opening, in (mm)	3 (76)	3 (76)	4 (101)	4 (101)	4 (101)	4 (101)
Maximum blending rate (approx.), lbs/hr (kg/hr)	350 (159)	700 (318)	1500(680)	3500 (1590)	4000 (1820)	5000 (2270)
Weight of machine (approx.), lbs (kg)	145 (66)	200 (91)	400 (185)	600 (275)	600 (275)	600 (275)
Shipping weight (approx.), lbs (kg)	200 (91)	400 (185)	600 (275)	850 (390)	850 (390)	850 (390)

1-11 OA (-E) Series Specifications

OA Series Specifications	OA-002	OA-012	OA-030	OA-060
Number of materials blended	2 to 4	2 to 6	2 to 6	2 to 6
Supply hopper capacity, ft ³ (l)	0.25 (7)	1.1 (31)	1.9 - 2.75 (54 – 77)	
Weigh hopper capacity, ft ³ (l)	0.08 (2.2)	0.14 (4)	0.6 (16)	1.4 (40)
Typical batch size, lbs (kg)	3 (1.3)	5 (2.3)	20 (9)	50 (22)
Mixer type	Opti-mixer	“HC”		
Mixer capacity, lbs (kg)	6 (2.7)	10 (4.5)	40 (18)	100 (45)
Mixer motor size, HP (kW)	1/6 (.12)	1/4 (.18)	1/2 (.37)	1 (.746)
Mixer speed, rpm	30	50	50	50
Load cell capacity (1 per blender except OA-002)	2 @ 2 kg	5 kg	10 kg	20 kg
Blended material discharge opening	3 (76)	3 (76)	3 (76)	4 (101)
Maximum blending rate (approx.), lbs./hr. (kg/hr)	100 (45)	600 (270)	1500 (680)	3000 (1360)
Weight of machine (approx.), lbs (kg)	145 (7.0)	200 (91)	450 (205)	600 (275)
Shipping weight (approx.), lbs (kg)	200 (91)	400 (185)	650 (295)	850 (390)

Note: OS/OA features and specifications are subject to change without notice.

1-12 Model OS/OA Blender System Component Description

This section describes the various components of the blending system. The HydReclaim OS/OA blending system is made up of the following components:

1-12-1 Material Supply Hoppers

1-12-2 Slide Gate Metering Assemblies (OS Series)

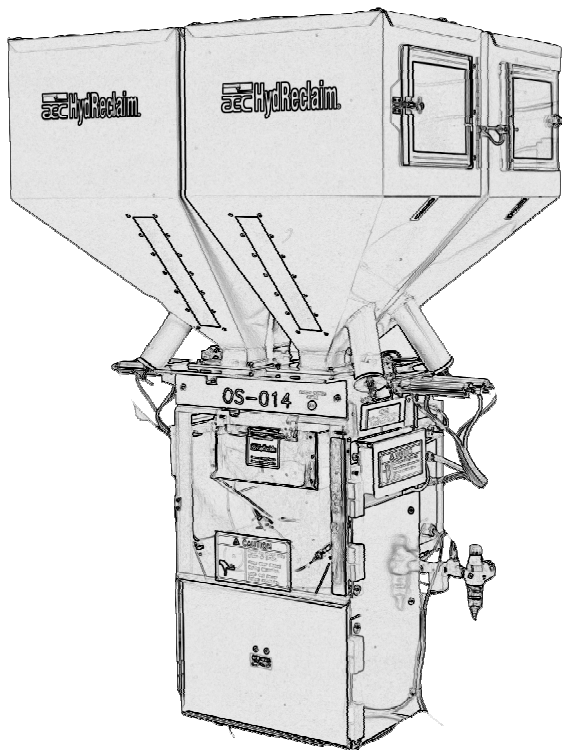
1-12-3 Auger Metering Assemblies (OA Series)

1-12-4 Weigh Hopper

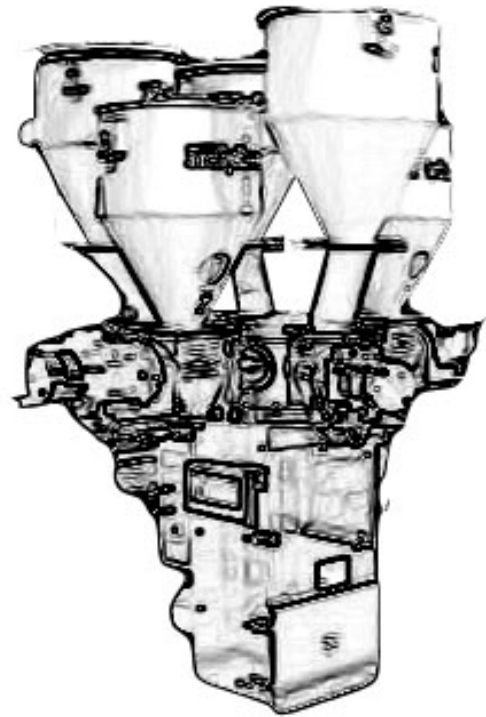
1-12-5 Weigh Hopper Dump Valve

1-12-6 Mix Chamber

1-12-7 Operator Control Panel



OS



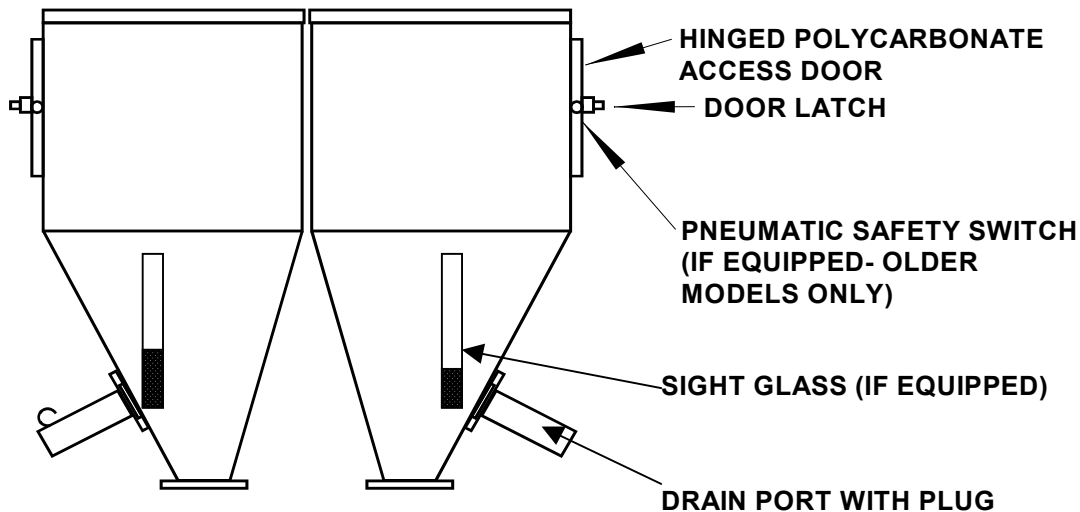
OA
(with optional Opti-Mixer™)

1-12-1 Material Supply Hoppers

The material supply hoppers are located on top of the blender frame. These hoppers store a supply of material for the individual metering devices. They are sized based on the total throughput of the blender.

The OS/OA blending system does not include any level indication devices on the unit. Optional low-level sensors and low-level alarm panels are available. The blender controller will alarm if it runs out of material while trying to make a batch, but low-level sensors will alert floor personnel to the problem sooner.

Each hopper is equipped with a sight glass and/or access door.



Typical Material Supply Hoppers

1-12-2 Slide Gate Metering Assemblies (OS Series)

Air operated slide gates are provided to meter the majority of pellet ingredients on the OS blenders.

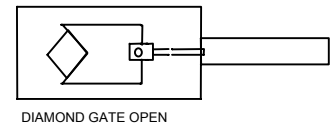
Important! The metering range assumes $\frac{1}{8}$ " diameter free-flowing plastic pellets weighing approximately 35 lbs./cu. ft. This is meant to be an approximate sizing recommendation and can vary with different bulk density resins, pellet configuration, etc.



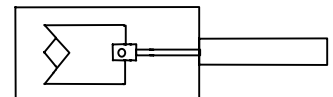
A stroke limiter (included) can be installed on the metering gates to limit their travel. This device decreases the stroke of the gate and reduces the metering orifice of the valve. The unique diamond gate provides a square opening at any stroke length, providing more consistent flow from smaller valve openings than conventional slide gates. This stroke limiter may be necessary to accurately meter low percentage ingredients.

The air cylinders operating the slide gate are rugged, stainless steel cylinders designed for industrial use.

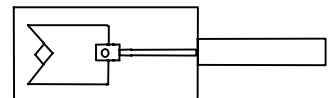
The unique HydReclaim diamond gate provides a constant aspect opening, that remains square regardless of the stroke length of the cylinder. This design provides a wider cross sectional opening when approaching a closed position, and provides better flow of plastic pellets out of the opening.



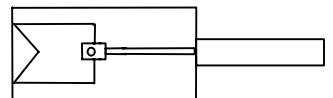
DIAMOND GATE OPEN



DIAMOND GATE 1/2 CLOSED



DIAMOND GATE 3/4 CLOSED



DIAMOND GATE CLOSED

WARNING!



Slide gates create a pinch-point hazard.

Always disconnect and lockout all electrical power and pneumatic (i.e. compressed air) sources prior to servicing or cleaning any HydReclaim blender, including all OS/OA Series models. Failure to do so may result in serious injury.

Each of the diamond gate air cylinders is actuated by a solenoid valve, which are controlled by the blender.

When the solenoid valve is energized, it opens the metering valve cylinder. When the solenoid valve is de-energized, it closes the metering valve cylinder.

If the power is interrupted to the blender, the metering valves will return to the closed position, to prevent material from over-filling the weigh hopper/mix chamber.

Important! If the blender is in metering mode with one of the slide gates open, ***do not open the front door of the blender!***



The safety switch shuts off the air supply to the blender. An open feeder slide gate stays open, and ***an overflow of the weigh hopper can occur!***

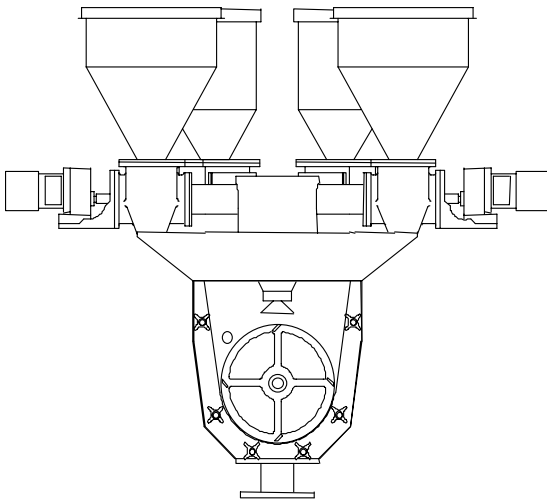
1-12-3 Auger Metering Assemblies (OA Series)

OA Series blenders are equipped with auger metering units, including the following components:

- Cast aluminum feeder bodies
- Cast aluminum motor mounts
- Heavy-duty AC gear motors (Optional DC drives are available)
- Drain spouts with slide gate shut-off
- Machined steel auger
- Cast aluminum auger housing
- Spun aluminum material supply hoppers
- Cover with cut-out for Whitlock SRC vacuum receivers

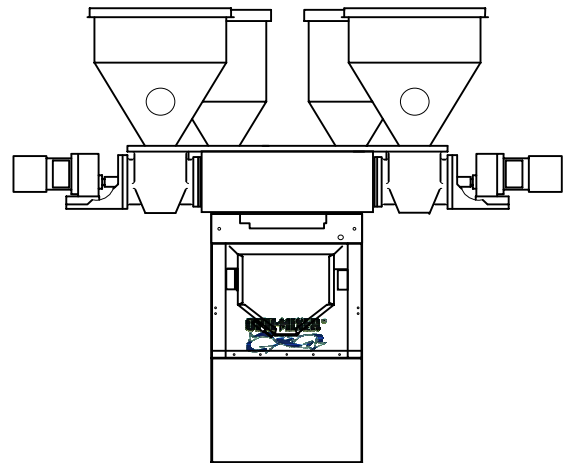
Optimum OA Series available with a Choice of Mixers

OA with standard “HC” mixer



**Multiple regrinds and
more difficult materials**

OA with optional Opti-Mixer®



**Pellets and one
free-flowing regrind**

1-12-4 Weigh Hopper

The weigh hopper on the OS/OA blender is used to weigh each batch of material, and includes an air-operated discharge valve. After the batch is weighed and the level sensor in the lower mix section is uncovered, the valve will open and discharge the batch into the mixer with the existing blended material. The discharge valve is also provided with a quick disconnect so the weigh hopper can be removed for cleaning.

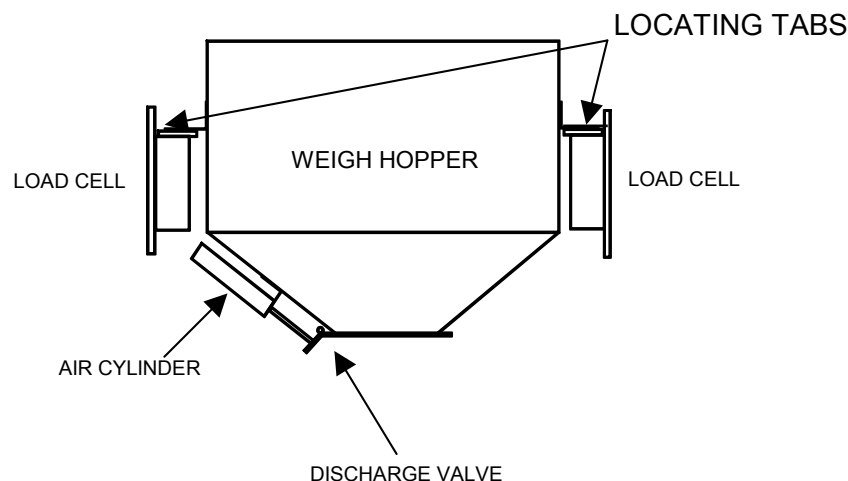
On an OS blender, the weigh hopper rests on each side on a precision cantilever load cell. To remove the weigh hopper, lift the hopper from the bottom, hold the discharge valve closed, and slide it out once clear of the locating tab on the bracket above the load cell.

Once the hopper has been cleaned, reposition it onto the load cell brackets, using care not to damage the load cells. Position the hopper as close to the center position between the load cells as possible.

Important! Use care when replacing the weigh hopper, since the load cells are delicate weighing instruments and can be easily damaged. Do not use force to push in the weigh hopper. If it is positioned properly, it will slide in very easily.



Load cells, if damaged, will have to be sent back to the manufacturer for testing and evaluation.



The OA-HC style weigh hopper is bolted in place, and is generally not removed.

1-12-5 Weigh Hopper Discharge Valve

The weigh hopper discharge valve holds the material until it is dumped into the mixing section. The cylinder is actuated by a solenoid in the valve stack on the rear of the blender.

In looking at the pneumatic circuit, you can see that the air regulator controls the flow of air to the valve stack. When the weigh hopper discharge cylinder solenoid valve is not electrically energized, it will provide air pressure to the air cylinder and hold the shaft in an extended position, holding the dump valve closed.

When the air cylinder is actuated, the air pressure to the dump valve will be removed, causing it to open.

The air cylinder on the weigh hopper includes a spring return to allow the cylinder to retract in the absence of air pressure on the cylinder. This will cause the dump valve to open.

CAUTION! The pneumatic system used on the OS/OA, like all pneumatic systems, is highly sensitive to dirty, wet or contaminated air. If dirt, water, or any other air-borne contaminants enter the system, the components could be damaged and injury to the operator could result. *A proper air supply must be supplied to the blender.*



When the safety circuit is disabled, the air pressure to the cylinder will drop off by shutting off all the air supply to the valve stack with the pilot operated master air valve. This will also cause the weigh hopper discharge door to open.

1-12-6 Mix Chamber

All of the HydReclaim batch blenders are equipped with an integral mix chamber. The mix chamber holds multiple batches of material so any variations in a batch are averaged over time.

1-12-6-1 Opti-Mixer™

The Opti-mixer™ is designed to provide bi-directional mixing action and can be easily taken apart for cleaning. This design is standard on all OS blenders, and is optional on all OA models.

1-12-6-2 “HC” Mixer

The “HC” Mixer features an open wheel design and is best used for multiple regrind materials. It is standard on all OA models.

WARNING!



**Never reach into the mix section of the blender without disconnecting the power or air supply.
Serious injury can result from getting your hand caught in the rotating mixer!**

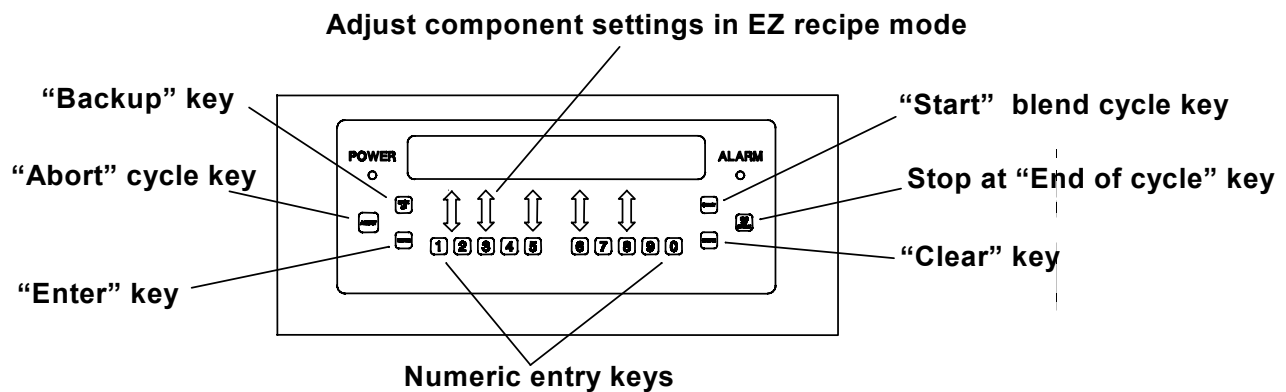
1-12-7 Operator Control Panel

The operator control panel includes an 8 foot (2.4 m) cable and can be remote mounted adjacent to the blender. The panel can be unplugged and removed if necessary.

The controller includes an embedded computer. This design provides excellent blender performance along with an easily replaceable control panel in the unlikely failure of any computer or electronic part.

The display and keypad menu format is very simple. After installation and setup, simply enter in the recipe and start the blender.

If it is desired to have a local display and control of the blender closer to a remote operator station, an optional RS485 remote control panel (RCP) is available.



Note: The panel keypad on your unit may be slightly different than shown.



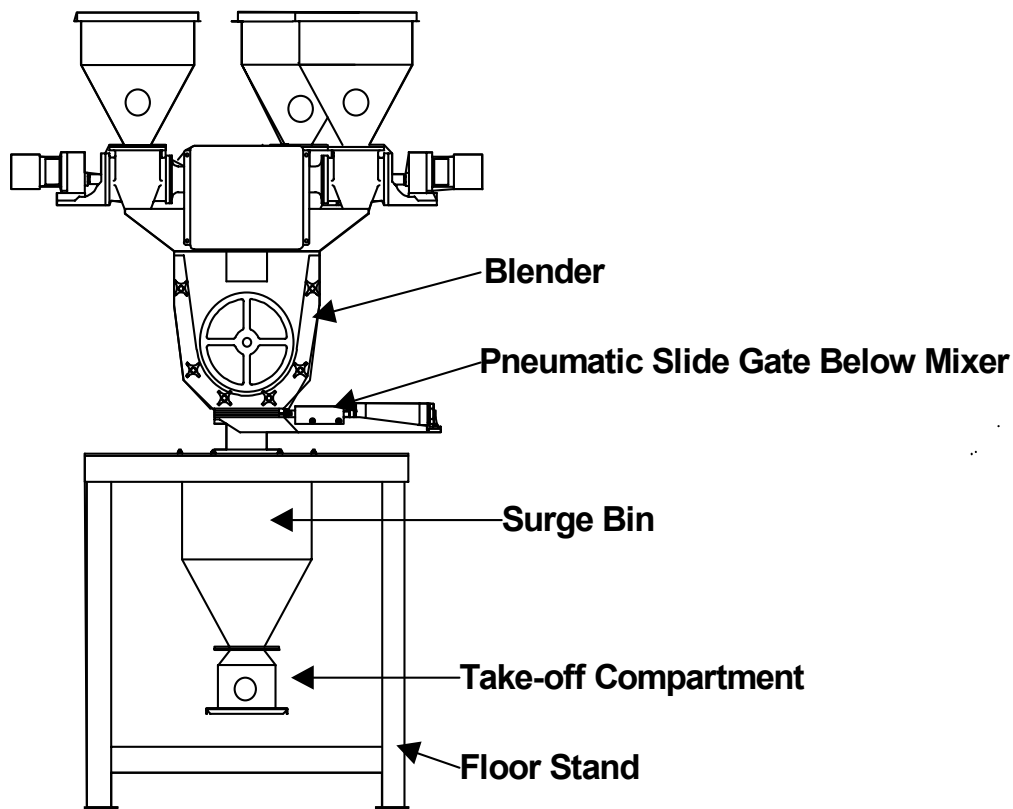
1-13 Pneumatic Slide Gate Below Mixer (Optional)

The OS/OA blending system can be equipped with an optional pneumatic slide gate below the mixing chamber. The gate is used in applications when the blender is mounted above a large hopper, or for gaylord filling, etc. This gate holds the material in the mixing section, to ensure that it is properly mixed. Control of the mixer function is described below, and is determined by the position of the “knife gate switch” located on the side of the back control panel.

Mixer Slide Gate Switch Positions

AUTO	Slide gate closes when mixer starts and opens when mixer stops
OPEN	Slide gate open all the time
CLOSE	Slide gate closed all the time

TYPICAL CENTRAL BLENDER LAYOUT



2-1 Work Rules

Install, operate, and maintain this equipment according to applicable work and safety codes for your location. This includes OSHA, CE, NEC, CSA, SPI, and many other local, national, and international regulations. Obey these specific work rules:

- ☒ Read and follow the instructions in this manual before installing, operating, or maintaining any equipment. Additional copies are available from AEC, Inc.
- ☒ Only qualified persons should work on, or with, this equipment.
- ☒ Work only with approved tools and devices.
- ☒ Disconnect and lock out power while working on this equipment.

2-2 Tools and Equipment Needed

You'll need the following:

- Hand tools
- Fork lift or overhead lift
- Wire, conduit, and fittings for wiring runs (if receptacle is not already in place)
- Mounting bolts with nuts and washers
- Compressed air tubing and fittings

2-3 Mechanical Installation

Blenders may be mounted on the machine, a stand, or a mezzanine. Be sure it is securely attached and additional bracing is used if necessary. The sections on the following pages explain general installation rules.



Read manual thoroughly before installing blender.



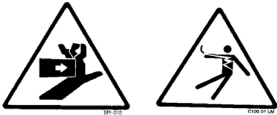
Use approved safety straps or chains to lift the blender at the marked lifting points.

2-4 Safety Considerations

The terms **NOTICE**, **CAUTION**, **WARNING**, and **DANGER** have specific meanings in this manual. *See Section 11 for a complete list of specific safety warning information.*

A **NOTICE** is used to indicate a statement of company policy directly or indirectly related to the safety of personnel or protection of property.

A **CAUTION** indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



A **WARNING** indicates a potentially hazardous situation which, if not avoided could result in death or serious injury.

A **DANGER** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This word will be limited to the most serious situation(s).



The term **IMPORTANT** emphasizes areas where equipment damage could result, or provides additional information to make a step or procedure easier to understand. Disregarding information marked **IMPORTANT** would not be likely to cause personal injury.

REPORTING A SAFETY DEFECT

NOTE: If you believe that your equipment has a defect which could cause injury, you should immediately discontinue its use and inform AEC, Inc., at our address listed in this manual.

The principle factors which can result in injury are:

1. Failure to follow proper operating and clean-out procedures, i.e. lockout/tagout.
2. Failure to maintain a clean and safe working environment.

2-5 General Responsibility

NO MATTER WHO YOU ARE...

Safety is important. Owners, operators, and maintenance personnel must realize that every day, safety is a vital aspect of their jobs.

If your main concern is loss of productivity, remember this: **Production is always affected in a negative way following an accident.** The following are some of the reasons, which can affect your production:

- **Loss of a skilled operator (temporarily or permanently)**
- **Breakdown of shop morale**
- **Costly damage to equipment**
- **Down-time**

An effective safety program is responsible and economically sound.

Organize a safety committee or group, and hold regular meetings. Promote this group from the management level. Through this group, the safety program can be continually reviewed, maintained, and improved. Keep minutes or a record of the meetings.

Hold daily equipment inspections in addition to regular maintenance checks. You will keep your equipment safe for production and exhibit your commitment to safety.

Please read and use this manual as a guide to equipment safety. This manual contains safety warnings throughout, specific to each function and point of operation.

2-6 Operator Responsibility

The operator's responsibility does not end with efficient production. The operator usually has the most daily contact with the blender and intimately knows its capabilities and limitations.

Plant and personnel safety is sometimes forgotten in the desire to meet incentive rates, or through a casual attitude toward machinery formed over a period of months or years. Your employer probably has established a set of safety rules in your workplace. Those rules, this manual, or any other safety information will not keep you from being injured while operating your equipment.

ONLY YOU can make safety work for you by constantly thinking about what is safe and what is not. It is often the "just once" that an operator reaches into a blender to remove material and it results in serious injury.

Learn and always use safe operation. Cooperate with co-workers to promote safe practices. Immediately report any potentially dangerous situation to your supervisor or appropriate person.

REMEMBER:

- **NEVER** place your hands or any part of your body in any dangerous location.
- **NEVER** operate, service, or adjust the blender without appropriate training and first reading and understanding this manual.
- **NEVER** try to pull material out of the blender with your hands while it is running!
- Before you start the blender check the following:
 - Remove all tools from the blender;
 - Be sure no objects (tools, nuts, bolts, clamps, bars) are laying in the metering or mixing area;
- If your blender has been inoperative or unattended, check all settings before starting the unit.
- At the beginning of your shift and after breaks, verify that the controls and other auxiliary equipment are functioning properly.
- Keep all safety guards in place and in good repair. **NEVER** attempt to bypass, modify, or remove safety guards. Such alteration is not only unsafe, but will void the warranty on your equipment.
- When changing control settings to perform a different mode of operation, be sure selector switches are correctly positioned. Locking selector switches should only be adjusted by authorized personnel and the keys removed after setting.
- Report the following occurrences **IMMEDIATELY**:
 - unsafe operation or condition
 - unusual blender action
 - leakage
 - improper maintenance
- **NEVER** stand or sit where you could slip or stumble into the blender while working on it.
- **DO NOT** wear loose clothing or jewelry, which can be caught while working on a blender. Also cover or tie back long hair.
- Clean the blender and surrounding area **DAILY**, and inspect the machine for loose, missing or broken parts.
- Shut off power to the blender when it is not in use. Turn the switch to the **OFF** position, or unplug it from the power source.

2-7 Maintenance Responsibility

Safety is essential to the good health of both operator and machine. If you are a maintenance worker, you must make safety a priority in order to effectively repair and maintain equipment.

BEFORE REMOVING, ADJUSTING, OR REPLACING PARTS ON A MACHINE, REMEMBER TO DO THE FOLLOWING:

- **BLEED** all air pressure from system components (refer to the Maintenance Section of this manual.)
- **TURN OFF** all air and electric supplies and all accessory equipment at the machine.
- **DISCONNECT AND LOCK OUT** electrical and pneumatic power, and attach warning tags to the disconnect switch and air shutoff valve.

When you need to perform maintenance or repair work on a blender above floor level, use a solid platform or a hydraulic elevator. If there is a permanently installed catwalk on your blender, use it. The work platform should have secure footing and a place for tools and parts. **DO NOT** climb on blenders, machines, or work from ladders.

If you need to repair a large component, use appropriate handling equipment. Before you use handling equipment (portable “A” frames, electric boom trucks, fork trucks, overhead cranes) be sure the load does not exceed the capacity of the handling equipment or cause it to become unstable.

Carefully test the condition of lifting cables, chains, ropes, slings, and hooks before using them to lift a load.

Be sure that all non-current carrying parts of electrical apparatus, electrical component enclosures, and the blender frame are correctly connected to earth ground with an electrical conductor that complies with current codes. Install in accordance with national and local codes, which apply.

When you have completed the repair or maintenance procedure, check your work, remove your tools, rigging, and handling equipment.

Do not restore power to the blender until all persons are clear of the area. Start and run the blender until you are sure all parts are functioning correctly.

BEFORE you turn the blender over to the operator for production, verify all guards and safety devices are in place and functioning properly.

2-8 Safety

2-8-1 Description and Objectives

This section includes information on safety devices and procedures that are inherent to the OS/OA blending system. This manual is not intended to supersede or alter safety standards established by the user of this equipment. Instead, the material contained in this section is recommended to supplement these procedures in order to provide a safer working environment.

At the completion of this section, the operator and maintenance personnel will be able to:

- ***Identify and locate specific safety devices.***
- ***Understand the proper use of the safety devices provided.***
- ***Describe the function of the safety devices.***

2-8-2 Safety Circuit Standards

Safety circuits used in industrial systems protect the operator and maintenance personnel from dangerous energy. They also provide a means of locking out or isolating the energy for servicing equipment.

Various agencies have contributed to the establishment of safety standards that apply to the design and the manufacture of automated equipment. The Occupational Safety and Health Administration (OSHA) and the Joint Industrial Council (JIC) are just a few of the organizations that have joined with the plastics industry to develop safety standards.

Every effort has been made to incorporate these standards into the design of the OS/OA blending system; however, it is the responsibility of the personnel operating and maintaining the equipment to familiarize themselves with the safety procedures and the proper use of any safety devices.

2-8-3 Fail Safe Operation

If a safety device or circuit should fail, the design must be such that the failure causes a “Safe” condition. As an example, a safety switch must be a normally open switch. The switch must be held closed with the device it is to protect. If the switch fails, it will go to the open condition, tripping out the safety circuit.

At no time should the safety device fail and allow the operation to continue. For example, if a safety switch is guarding a motor, and the safety switch fails, the motor should not be able to run.

2-8-4 Safety Device Lock-Outs

Some safety devices disconnect electrical energy from a circuit. The safety devices that are utilized on HydReclaim OS/OA models are primarily concerned with the pneumatics and electrical power disconnection, and the disabling of moving parts that may need to be accessed during the normal operation of the machine.

Some of the safety devices utilize a manual activator. This is the method of initiating the safety lock out. This may be in the form of a plug, disconnect plug, lever or a handle. Within this lockable handle, there may be a location for a padlock. Personnel servicing the equipment should place a padlock in the lockout handle.

WARNING! Always disconnect and lockout all electrical power and pneumatic (i.e. compressed air) sources prior to servicing or cleaning any HydReclaim blender, including all OS/OA units. Failure to do so may result in serious injury.



At no time must *anyone* remove the lockout or reconnect the twist plug, other than the person who installed the lockout or who unplugged the twist plug.

2-8-5 Lock-Outs, Plugs, and Other Safety Devices

The OS/OA blending system utilizes several types of safety devices.

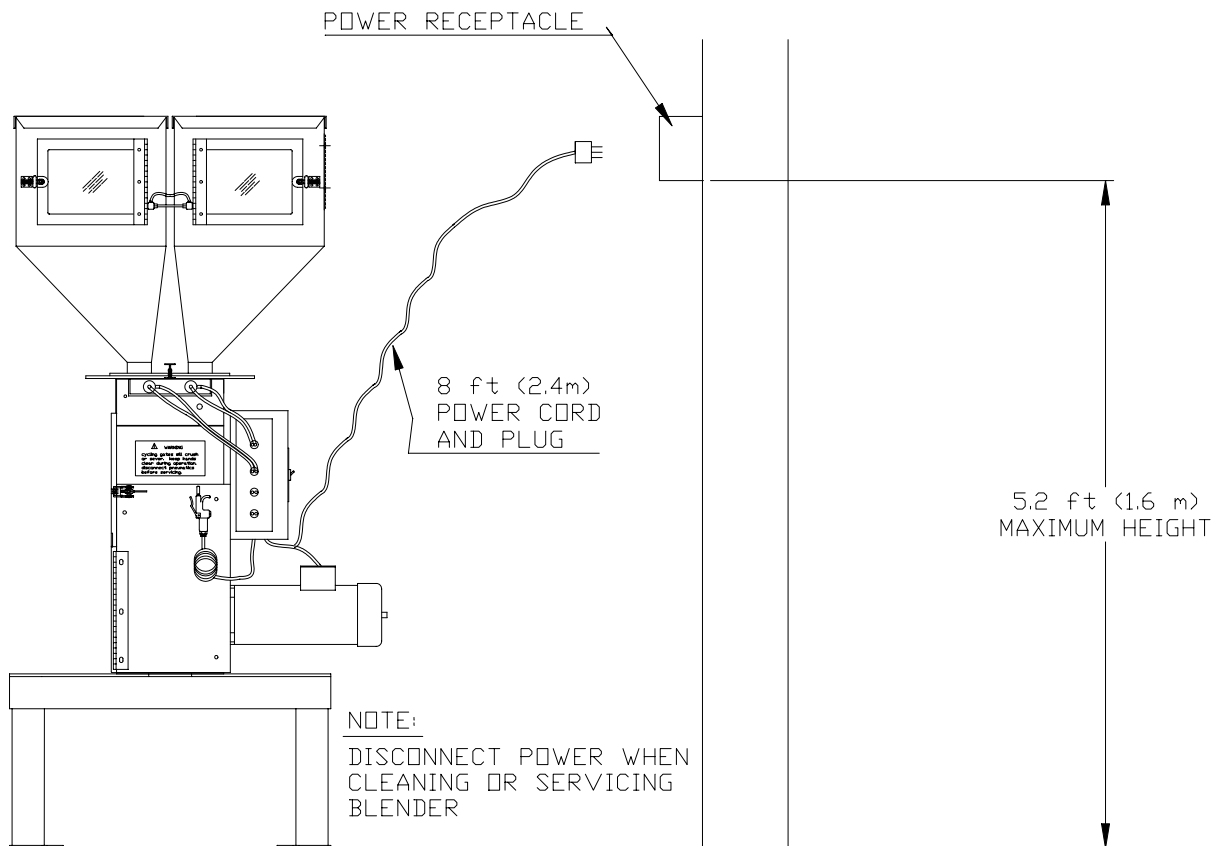
The Line Cord Plug

This line cord plug allows the operator or maintenance personnel to unplug the blending system from its power source and tag it out. This plug may be tagged with any number of approved electrical lockout tags. These tags are available at most electrical supply stores.

WARNING!



Disconnect both of these items to ensure optimum maintenance personnel safety when cleaning or servicing this equipment.

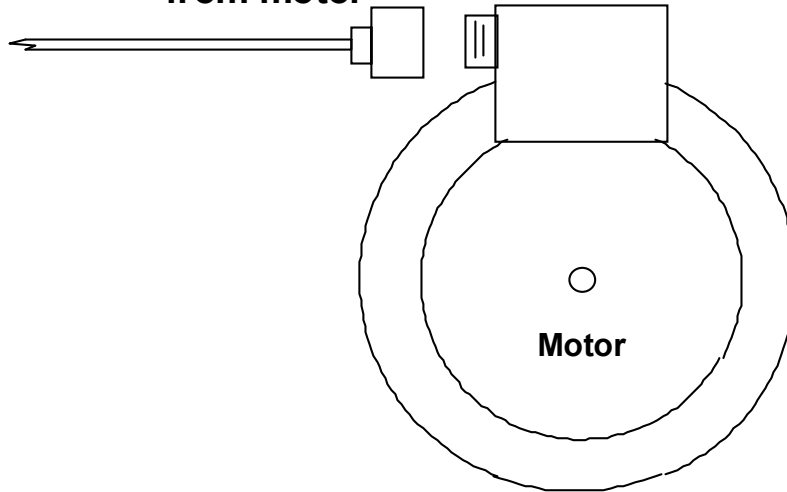


Electrical Disconnect Plug

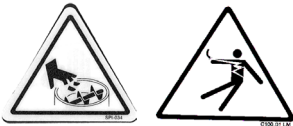
Twist Cap Plug Connected to Each Auger Motor (OA Blender only)

The cap plug must be turned counter-clockwise to loosen and the female end of the cord removed from the motor plug. This disables the motor from turning while the auger unit is being serviced or cleaned. The motor cords are cut to length so they must be disconnected before the auger can be removed from the housing. Disconnect plug before cleaning or servicing motors or augers.

**Unscrew and remove plug
from motor**



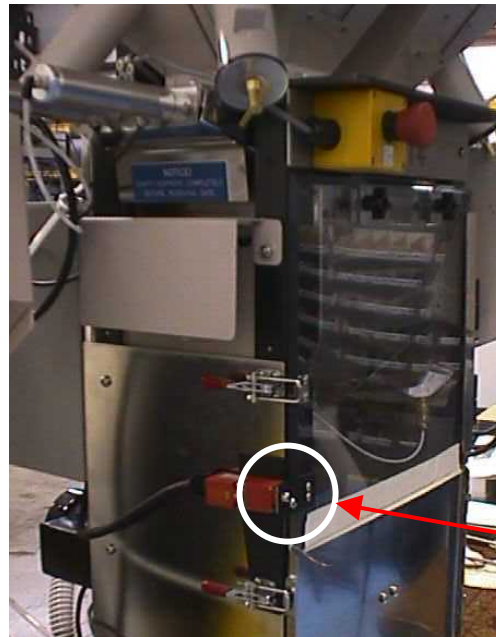
WARNING!



At no time must *anyone* remove the lockout or reconnect the twist plug, other than the person who installed the lockout or who unplugged the twist plug.

2-9 Electric Safety Interlock Switch (All Models)

A unique electric safety switch is used to shut off power to the blender any time the mixer door is opened. **Do not tamper or alter with this switch in any way.**



Electrical safety interlock switch
(Located on mixer door)

2-10 Air Pressure Safety Circuit (If Equipped-not included on “CE” models)

The OS/OA blending system may be equipped with an air pressure safety system that will drop the air pressure from a pilot operated master air valve and an air cylinder actuated electrical safety switch.

Each unsafe access opening of the blender is provided with an air safety switch that is held in the closed position by an access door, metering device, or any other unsafe opening that could be accessible to the operator without the use of a tool.

If any one of the openings to the blender is opened that would allow access to the interior of the blender, an air safety switch will open. This air safety switch opens to atmosphere, the hold in air pressure circuit for the master air valve, and the air actuated electrical master safety switch.

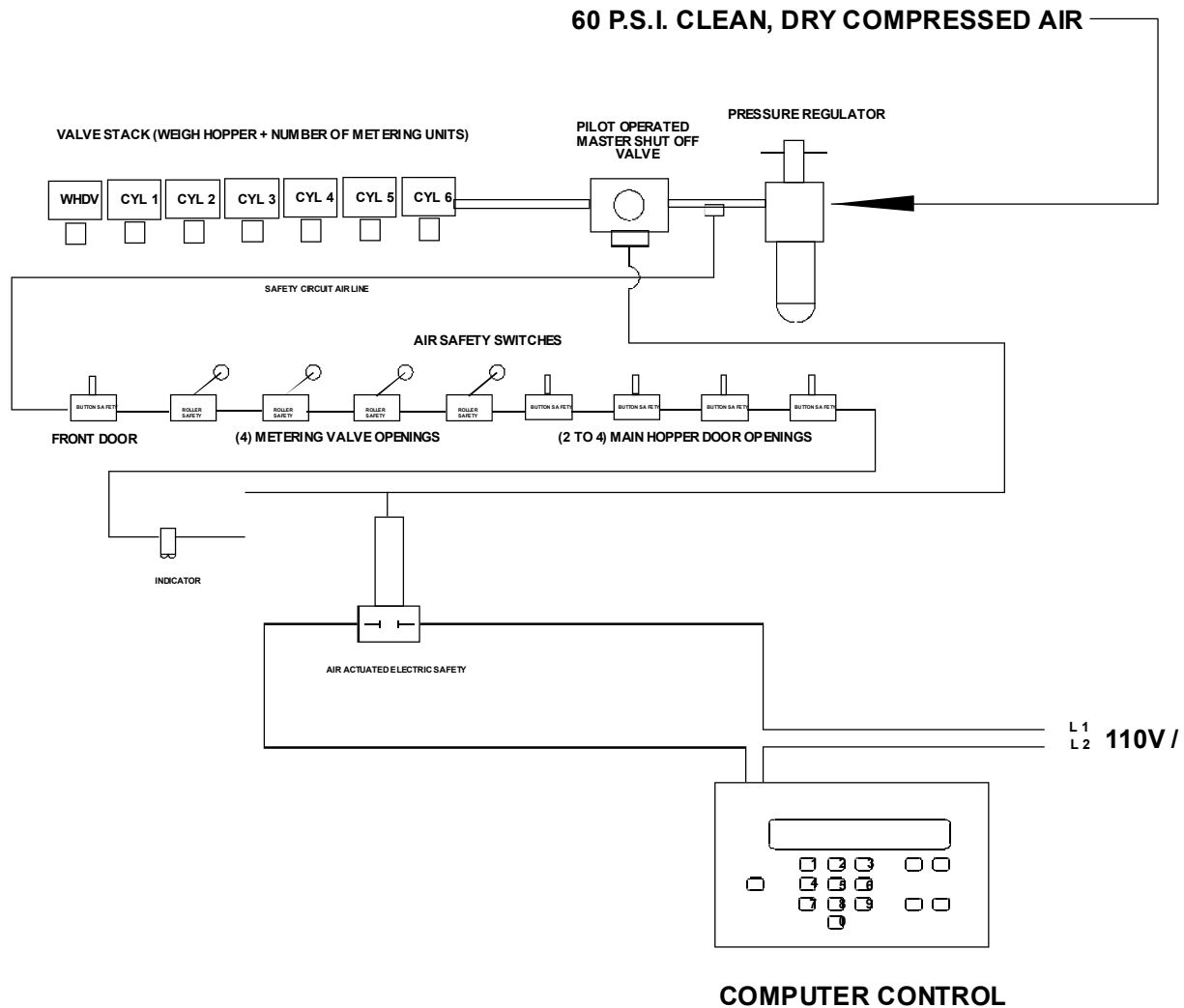
This will cause the air supply to the blender to be cut off to the solenoid valves, and the electrical supply to the computer control panel will be disconnected.

The only way a component to the blender could be operated is for the opened safety switch to be physically held closed, and for the computer to be restarted by a key stroke or for the safety switch to be held in while depressing the manual actuator button on a solenoid valve with a screwdriver, etc.

The safety system must have (2) things happen at the same time to be bypassed. The only way this can happen is to have an operator or maintenance person physically perform these acts.

When the safety circuit is energized, the computer panel display will become active, and a green safety system indicator will be actuated on the front of the blender.

OS SAFETY CIRCUIT LAYOUT



WARNING! Always disconnect and lockout all electrical power and pneumatic (i.e. compressed air) sources prior to servicing or cleaning any HydReclaim product, including all OS/OA Series blending systems. Failure to do so may result in serious injury or death.



WARNING! Air line reversal. If air lines are removed from the switch itself, be sure they are re-installed on the proper parts. If they are reversed, you will hear air leaking out of the switch and the safety system will be bypassed.



3-1 Unpacking and Inspection

You should inspect your AEC/HydReclaim batch blender components for possible shipping damage. If the container and packing materials are in reusable condition, save them for reshipment if necessary.

Thoroughly check the equipment for any damage that might have occurred in transit, such as broken or loose wiring and components, loose hardware and mounting screws, etc. In case of breakage, damage, shortage, or incorrect shipment, refer to the following sections.

3-2 In the Event of Shipping Damages

Important!



According to the contract terms and conditions of the Carrier, the responsibility of the Shipper ends at the time and place of shipment. The Carrier then assumes full responsibility of the shipment.

- ☑ Notify the transportation company's local agent if you discover damage.
- ☑ Hold the damaged goods and packing material for the examining agent's inspection. **Do not return any goods to AEC, Inc. before the transportation company inspection and authorization.**
- ☑ File a claim against the transportation company. Substantiate the claim by referring to the agent's report. A certified copy of our invoice is available upon request. The original Bill of Lading is attached to our original invoice. If the shipment was prepaid, write us for a receipted transportation bill.
- ☑ Advise AEC, Inc. regarding your wish for replacement and to obtain an RMA (return material authorization) number.

Parcel Post Shipment

- ☒ Notify AEC, Inc. at once in writing, giving details of the loss or damage. This information is required for filing a claim with our insurance company.
- ☒ Hold the damaged goods with the container and packing materials for possible inspection by postal authorities.

United Parcel Service Shipment

- ☒ Contact your local UPS office regarding damage and insurance claims.
- ☒ Retain the container and packing.
- ☒ Notify AEC, Inc. at once.

3-3 If the Shipment is Not Complete

Check the packing list. The apparent shortage may be intentional. Back-ordered items are noted on the packing list. You should have:

- ☒ AEC/HydReclaim OS/OA gravimetric batch blender components
- ☒ Bill of lading
- ☒ Packing list
- ☒ Operating and Installation packet
- ☒ Electrical schematic and panel layout drawings
- ☒ Component instruction manuals

Re-inspect the container and packing material to see if you missed any smaller items during unpacking. Determine that the item was not inadvertently taken from the area before you checked in the shipment. Notify AEC, Inc. immediately of the shortage.

3-4 If the Shipment is Not Correct

If the shipment is not what you ordered, **contact AEC, Inc. immediately.** For shipments in the United States and Canada, call 1 (630) 475-7061; for all other countries, call 001 (630) 475-7069. Include the order number and item. *Hold the items until you receive shipping instructions.*

3-5 Returns

Important!



Do not return any damaged or incorrect items until you receive shipping instructions from AEC, Inc.

- Notes -

4-1 Chapter Description and Objectives

It is the intent of this chapter to familiarize the reader with the proper site requirements and installation procedures of the OS/OA blending system. The information in this chapter is NOT meant to replace or supersede an established local or company implemented procedures. It is meant to enhance them.

4-2 Site Requirements

This section describes site requirements in detail. These requirements are broken down into mechanical mounting, electrical connections and pneumatic connections. Since the OS/OA is available in several different mounting arrangements, it is necessary for the reader to become familiar with the different arrangements.

4-2-1 Mounting Configuration

The OS/OA System is available in (3) three basic mounting arrangements. They are:

- **Machine Mount**
- **Mezzanine Mount**
- **Floor Mount**

4-2-1-1 Machine Mount

In a machine mounting application of the OS/OA unit, there are a few items to review **before** placement and mounting of the blending system begins.

First, verify the machine flange dimensions match the OS flange (if the optional pre-drilled holes were ordered). The OS can also be equipped with an optional cast throat section with a drain port. This will bolt under the bottom plate of the blender.

Verify that the machine throat is physically capable of supporting the OS/OA blending system with a full load of material and vacuum loading equipment installed.

Important!



While in operation, the OS/OA applies horizontal and vertical pressures to the mounting flange. If there is a question as to the mechanical stability of a mounting flange, contact AEC/HydReclaim's Engineering department.

Verify all clearances on the top and beside the processing machine. This is to insure that all motors, hoppers, control panels, etc. have adequate room for proper operation and servicing.

Refer to the assembly drawing with the unit for actual height and width dimensions.

Note: Allow at least 36" clearance around blender to provide adequate room for cleaning, servicing, etc.

Using proper lifting equipment, lift the blender, using the lifting lugs attached to the top plate of the blender. These lifting lugs can also be used to fasten horizontal or angled braces to the blender if more stability is needed.

Take care to insure proper orientation with adequate access to operator controls, mix chamber, and metering units.

Important!



Never weld on the blender, support stand, machine or mezzanine without first removing the control panel and verifying that the blender is properly grounded.

4-2-1-2 Mezzanine Mount

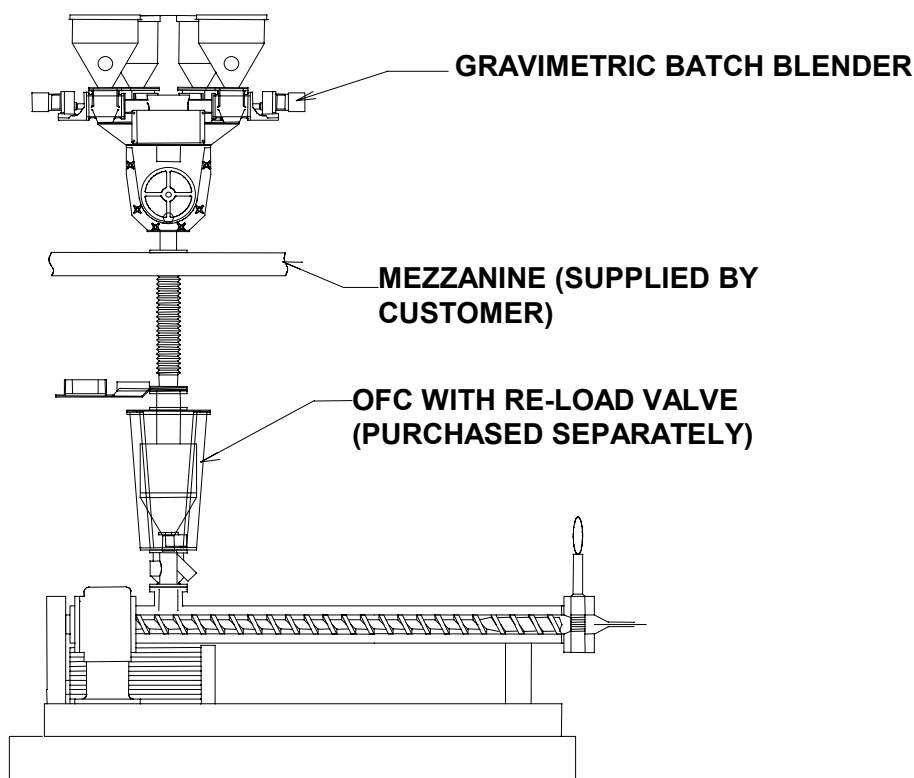
In a mezzanine mount application, review the following items before installation begins. First, verify the OS/OA mounting locations match the mezzanine supports. Verify that the mezzanine is capable of supporting the blender with a full load of material and vacuum loading equipment installed.

Important!



While in operation, the OS/OA applies horizontal and vertical pressures to the mounting flange. If there is a question as to the mechanical stability of a mounting flange, contact HydReclaim's Mechanical Engineering department.

Ensure that the gravity feed tube is installed in a vertical position, so that the materials will gravity flow to the extruder hopper. Use aluminum tubing or smooth wall flex hose.



If possible, use rigid tubing. Some flex hose will tend to sag and generate static that could cause de-mixing between the blender and the extruder.

Make sure that adequate space is around the blender (36" recommended) to allow proper cleaning, servicing, etc.

4-2-1-3 Floor Mount (Central Blender)

In a floor mounting application, ensure adequate clearance for all blender operations and maintenance. The operator and maintenance personnel must have access to parts of the blender. If necessary, it is the customer's responsibility to provide adequate, safe work platforms around the blender to meet state and local safety codes. Using proper lifting equipment, lift the OS/OA in place.

Important! The blender must be securely fastened to the floor before operating.

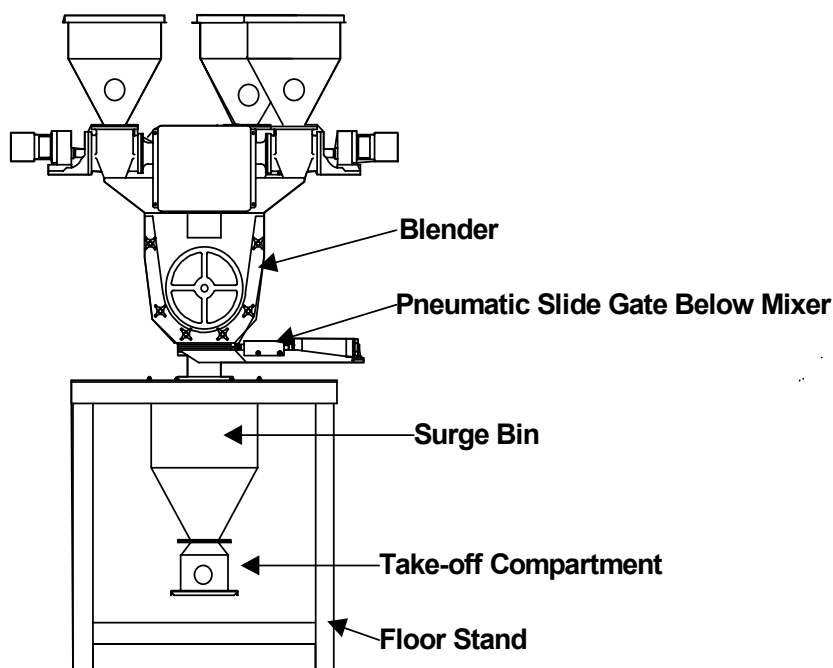


AEC/HydReclaim assumes *no* responsibility for any damages resulting from improper installation or improper handling during installation.

Make sure that the blender is **securely mounted to the floor** before installing loading equipment, loading with material and starting.

Make sure that the blender location is adequately away from high traffic aisles, and that fork trucks, etc. cannot damage the blender. Ensure that normal day-to-day operations will not place the blending system at risk of damage.

TYPICAL CENTRAL BLENDER LAYOUT



4-3 Installation Overview

This section will familiarize the reader with commonly used procedures for blender installation. After reading this chapter, the reader will be familiar with the installation requirements for all OS and OA blenders.

4-4 Mechanical Installation

The installation procedure should be used as a general guideline for the proper installation steps required to install the OS/OA blending system.

1. Remove crate from around blender.
2. Secure strap of proper lifting capacity to both lifting lugs.
3. Lift blender until strap is taut.
4. Remove bolts attaching bottom of blender to shipping skid.
5. Lift blender and position over machine throat or floor stand.
6. Set in position and secure by tightening four bolts.
7. Remove lifting strap.

Caution!



Lifting Lug

**Blender Lifting Lugs
(1 on each side)**

8. Mount the material conveying system receivers on the top of the blender supply hoppers.
9. Align the weigh hopper on the load cell brackets. Carefully adjust the load cell brackets to ensure that the weigh hopper is centered on the brackets without rocking. If for some reason the locating tabs do not align with the weigh hopper, they can easily be loosened and adjusted.

Important!



Use extreme care when tightening bolts on top of the load cells so you do not spring the load cells. The load cells are *extremely delicate and should be treated with care!*

10. Check the slide gate metering assemblies to ensure they are not damaged, and will slide back and forth freely. These are the most important items on the blender, besides the load cell and weigh hopper assemblies.

4-5 Electrical Installation

The standard HydReclaim OS/OA blending system is designed to operate on 110/1/50 or 60hz (220/1/50 CE models are also available). The current requirements vary with the blender's size and throughput rating. For exact current requirements, check the blender serial number tag, located on the rear plate of the mixer section.

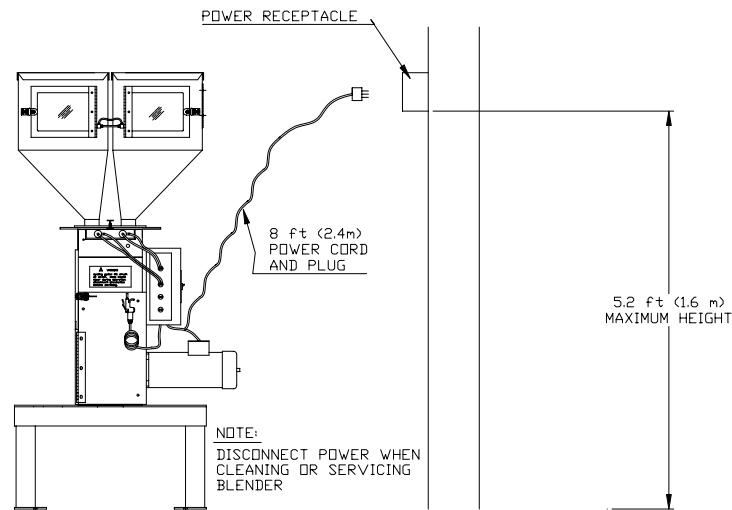
If a step down transformer was provided, it should never be used to power anything other than the blender. Loading equipment, etc. must be powered by another power source. As well as possibly overloading the transformer, the additional equipment may induce power line noise that may affect the operation of the blending system.

The transformer will be mounted and wired by the customer or your installer. If company or local codes require fusing or disconnects, these items must be supplied, wired, and mounted by the customer.

Each HydReclaim blending system MUST be connected to a separate source of power. Do not connect other electrical equipment, especially self-contained hopper loaders, on the same line as the blending system.

Ensure that the power entrance location on the blender panel remains unchanged. Make sure that the proper size wire and proper wire routing techniques are used when installing the supply wiring to the control panel. Care must be taken to ensure that the supply wiring does not interfere with the low voltage DC wiring.

The blender is equipped with a plug that functions as the disconnect device. The mating receptacle must be installed no higher than 5' feet (1.6 m) above the floor. Make sure your installation conforms to your regional electrical standards.



Power Receptacle Installation

4-6 Pneumatic Installation

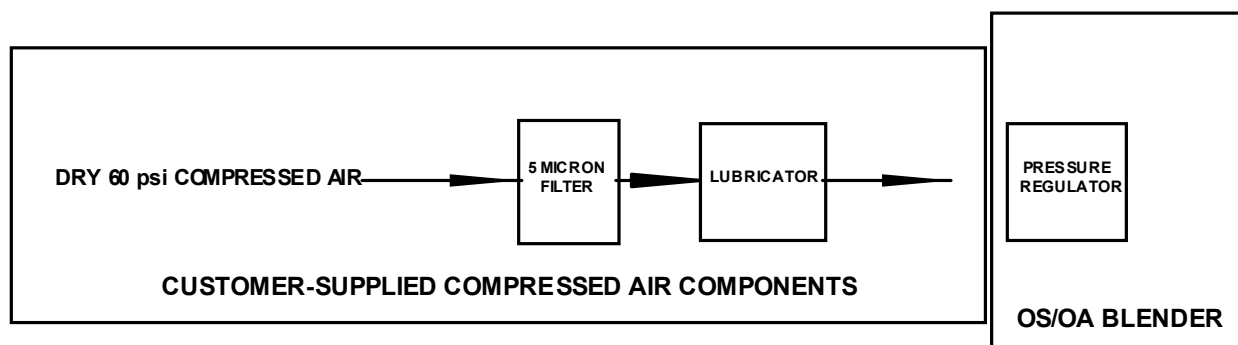
The OS/OA blending system uses plant-supplied compressed air to operate the metering and dump valves on the blender.

CLEAN AND DRY air must be supplied to the blender. The air supply should be filtered through a 5 micron air filter with a water separator. Oil should not be used unless air dryers are installed on the compressed air supply. In this situation, an oiler may be required on the blender to keep the air cylinder seals lubricated.

Important!



As this blender uses air for blender metering functions, it is very important to supply clean, dry air to the blender. Dirty air can affect blender accuracy, result in poor performance and cause injury. Provide a 5-micron air filter on the air supply to the blender, and be sure excess oil is removed.



AEC/HydReclaim provides all pneumatic lines on the blender piped to a single 1/4" NPT standard pipe thread fitting. The OS/OA blending system requires approximately 1 cfm (1.7 m³/hr) @ 60 psi (4.14 bar) air pressure for proper operation.

The working pressure of the blender cylinders is 60 psi (4.14 bar). This is adjustable by the regulator supplied on the rear panel of the blender. It is important to prevent fluctuation in the air pressure to the blender by not installing the unit on an airline. If this is the case, an accumulator tank with a check valve may have to be provided by the customer to ensure the blender a steady air supply.

CAUTION!



Always disconnect the compressed air supply when working on any part of the blender.

4-7 Blender Set-up

4-7-1 Description and Objectives

This section will discuss the mechanical setup and control system setup of the OS/OA blending system. After reading this chapter, you should be familiar with the mechanical setup and the electronic control setup of the OS/OA blending system.

4-7-2 Weigh Hopper Installation (“OS” Models only)

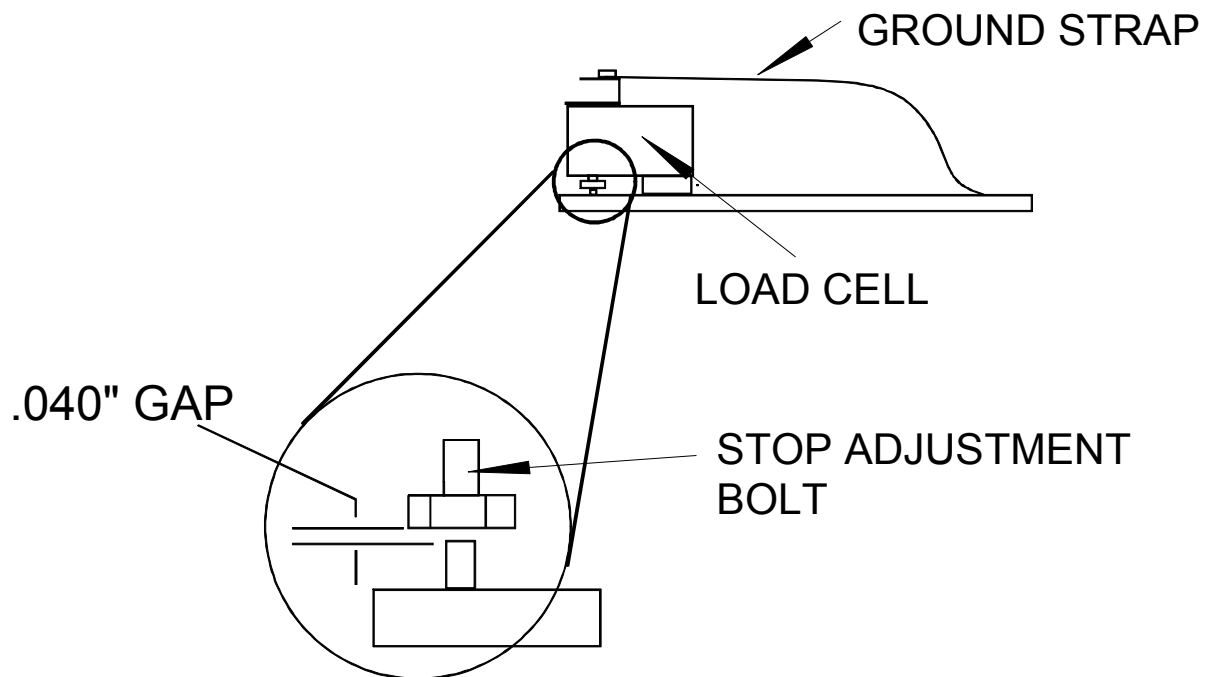
Remove the weigh hopper from the shipping box and install it in the blender on the load cell brackets. Connect the airline and close the mixer door, securing the latch.

4-7-3 Load Cell Adjustment

The mechanical setup of the OS/OA blending system involves the adjustment of the weigh hopper load cells (Please refer to the figure on the next page). This figure illustrates the proper adjustment of the load cell mechanical stop bolt. The setting for the positive stop is necessary to prevent the load cell from being “over-ranged” by excessive loading on the weigh hopper. The setting for the load cell stop is forty thousandths of an inch maximum (.040”). A feeler thickness gauge, with the weigh hopper empty, should be used to set this.

If a feeler gauge is not available, the weigh hopper should be filled with the material that is to be blended, and the stop adjusted so there is just a very small gap (a couple of sheets of notebook paper) between the load cell, and the blender base stop. This will allow the load cell to operate without mechanical restrictions and provide an overload safety. To adjust the stop, adjust the screw located on the bottom of the load cell. Adjust the screw up to increase the gap and down to decrease the gap.

Important! THE WEIGH HOPPER ASSEMBLY MUST HANG FREELY AND BE FREE FROM FRICTION, WITH NO MECHANICAL OBSTRUCTIONS OTHER THAN THE LOAD CELL ITSELF.



Load Cell Mechanical Stop Adjustment

4-7-4 Final Setup

1. Connect the blender to the appropriate power source.
2. Connect the compressed air piping, ensuring that a 5-micron air filter is installed, along with the proper water trap, and lubrication unit, if required. Verify that 60 psi (4.14 bar) of clean, dry compressed air is supplied to the blender.

Important! Again, make sure that **proper air supply connections are made to the blender**, as dirty, contaminated, wet air can damage blender components **and can quickly cause poor performance and accuracy!**



Make sure that the blender is supplied with clean, dry, 60 psi (4.14 bar) compressed air.

3. After powering up the blender and checking the safety circuit, use the diagnostics menu to verify the following:
 - ***Load cell connections***
 - ***Weigh hopper dump valve functions***
 - ***Feeder unit functionality***
 - ***Mixer motor function***
 - ***Mixer high level switch function***
4. Calibrate the blender load cells (See Section 5-5).
5. The blender should startup in “EZ” recipe mode. If so, enter a valid recipe. If not, the blender can be reconfigured for EZ Recipe, Percent, or Parts by entering the diagnostics menu and pressing the “8” key. Then select the mode following the key prompt on the screen.
6. Startup the blender by selecting “1” (startup) from the main menu, then select the batch mode operation. As soon as the blender starts, press the “CLEAR” key at least three (3) times to clear any inventory that may be in the register.

5-1 OS/OA Blender Sequence of Operation

1. Blender is started by turning system on or material dropping below level switch in mix chamber.
2. Metering gates are opened (or auger motors are turned on) to meter material into the weigh hopper in the programmed order.
3. Each component is weighed then the batch is dumped into the mix chamber (provided the mixer "High level" switch is not covered).
4. The material is mixed in the mix chamber and flows into the processing machine.
5. The optional slide gate below the mixer may control the flow of material to the molding machine or extruder.

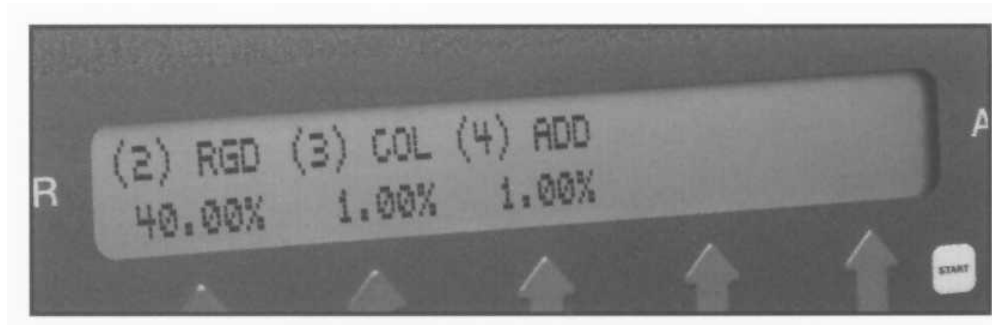
5-2 Quick Start Procedure

1. Calibrate the weigh hopper before running the blender (This will improve inventory accuracy).
2. Ensure that all ingredient supply hoppers to be used are filled with material.
3. Enter the recipe menu on the LCD panel by pressing the <2> key, and enter the blend recipe desired.
 - **"EZ" MODE** Scroll to the desired recipe for each ingredient using the UP-DOWN arrows. This mode asks for only the percentages requested for the regrind, color and any additive. The virgin percentage is calibrated automatically.
 - **% MODE** Key in each ingredient percentage using the numeric keys. **Note: *The last feeder always gets assigned the remainder.***
 - **PARTS MODE** Key in each ingredient part value using the numeric key. Also enter the last value.
4. Press the <Backup> key when finished.
5. Press the <Start> key to begin the blending process.

5-3 Recipe Entry Formats

5-3-1 “EZ” Menu

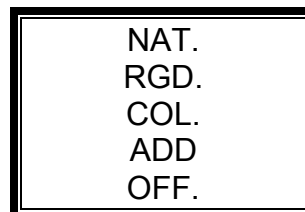
(Most common in injection molding)



The EZ Menu structure allows recipes to be entered and adjusted by using the UP-DOWN arrows located on the front of the LCD operator panel.

The first material hopper on the blender is always designated as “NAT” (virgin) material and cannot be changed.

The other ingredient labels can be designated by pressing the hopper number key (i.e. <2>, <3>, <4>, <5>, <6>). They can be changed by scrolling to read:



The proper label will be displayed for the ingredient.

If “OFF” is chosen, the ingredient will be eliminated from the recipe and not shown on the display.

The ingredient names selected will be displayed on the run mode display so the operator will know what material is being blended.

Important! The #1 hopper (“NAT” - Virgin Material) recipe ingredient will not be shown on the recipe setup menu.

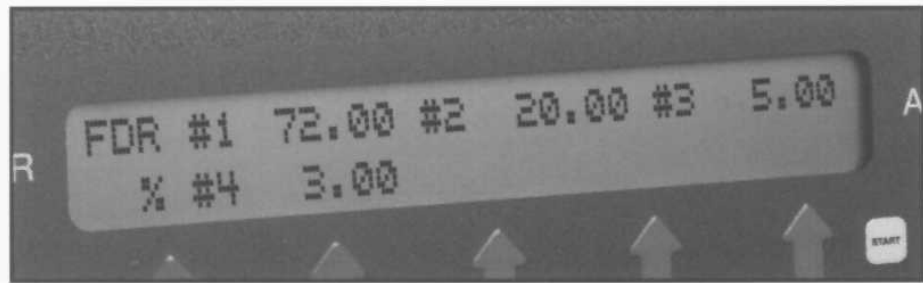


COL (Color) and ADD (Additive) designations will weigh the ingredient as a percentage of natural material only.

RGD (Regrind) designations will weigh the ingredient as a percentage of the total batch.

5-3-2 “Percentage” Menu

(Most common in extrusion and blow molding)



Extrusion processing often requires recipes in percentage format, especially if regrind is not involved, i.e. blown or cast film.

Enter the recipe menu by pressing the <2> key.

Choose “Percentage Recipe”.

Key in the appropriate percentage values using the numeric keys.

The control will automatically calculate the percentage of the last and final ingredient to equal 100% for all of the ingredients combined.

Simply follow the menu prompts through each ingredient.

Press the <Enter> key to save the recipe.

Important!



All ingredients are weighed as a percentage of the total batch.

5-3-3 “Parts” Menu



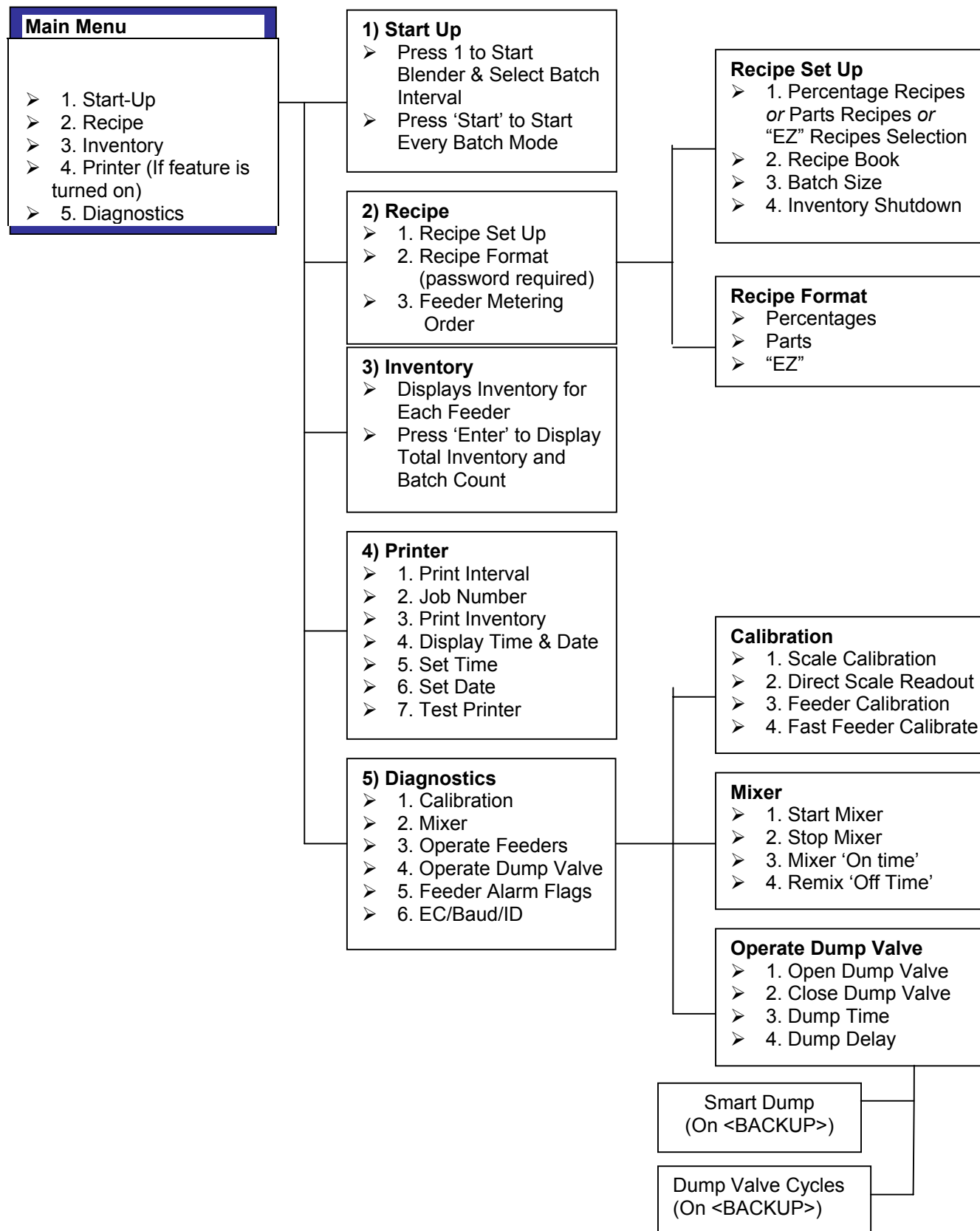
The “Parts” recipe entry lets the operator scroll to any number from 1 to 10,000 on any ingredient. For example, setting each component on a 4-component blender to 250 would equal 25% for each. Each individual ingredient can be adjusted without affecting the ratio of the others.

The preset part will be divided by the total of all parts, with each part representing the calculated weight for ratio control.

Example of a 5-component Blend in “Parts” Mode

Feeder Tag		Preset Part	Calculated Weight (Ratio Control)
Virgin	#1	7,200	7,200/10,000
Regrind	#2	2,000	2,000/10,000
Color	#3	500	500/10,000
Additive	#4	300	300/10,000
Total:		10,000	

5-4 OS & OA Series Control System Menu Structure



5-5 Blender Calibration

5-5-1 Standard Calibration (Recommended on a regular basis to ensure inventory accuracy)

1. Power up blender.
2. From the initial Start screen press “5” and key-in password <5><4><1><3> & <ENTER>.
3. Press <1> for calibration.
4. Press <1> for Scale Calibration.
5. Set zero weight and press start. (Make sure there is no material in the weigh hopper.)
6. Set the weight. (Put the weight on the weigh hopper.)
7. Enter calibration weight. (Enter the value stamped on the weight.)
8. ***If the message “+/- 10% of Factory press <EOC>” appears, press the end of the cycle key. Message: “Calibration constants saved” should be displayed.
9. Press the backup key until you reach the calibration screen. Now remove the weight.

5-5-2 Additional settings that usually do not have to be changed:

1. Press <2> for mixer options.
2. Press <1> or <2> to start and stop mixer manually.
3. Enter a “Mixer On” time by pressing <3>, this is the amount of time the mixer will mix. Remember that if the mix time is too long you may get material separation.
4. Press <4> to set “Re-mix” off time. This allows the mixer to come on between batches if the blender cycle time is very slow, i.e. if you want the mixer to come on every minute, set this to 60 seconds. If you don’t want to use this function, set the time to “0”.
5. Press <Backup>. The screen should say “Intermittent.” If you want the mixer to run all the time, press <Enter>.
6. Backup to <1> calibration screen and press <4> for Dump Valve operation.
7. Press <1> or <2> to open and close valve manually.
8. Press <3> to set your dump time. (Set time so that all the material in the weigh hopper has a chance to be evacuated.)
9. Press <4> for optional dump delay. This allows the mixer to start before the batch is dumped. Set to <0> if you don’t want to use it.
10. Press <Backup>. The screen should read “Smart Dump Disabled.” If you want to enable smart dump, press <Enter>. This feature overrides the Dump Time and automatically closes the dump valve when the weigh hopper is empty.

11. Press <Backup>. The screen should read "Current Dump Valve Cycles 1." To increase this press <1>, to decrease press <2>. This allows the dump valve to open and shut repeatedly when the weigh hopper is empty to shake lose any sticking material.
12. Press <Backup> until you reach the first calibration screen.
13. Press <5> to look at the alarm screen.
14. This screen allows you to change the way alarms on each feeder function. Toggle by pressing the corresponding feeder number. You can select "STP" (stop) which means if there is any kind of alarm on this feeder, the blender process will stop (i.e. The feeder supply hopper is out of material.) You can also set it to "Run." This mode will alarm but let the blender continue to run or you can set it to "OFF" mode. "OFF" mode sets no alarms.

5-5-3 Verifying Calibration

1. Press <5> from the start screen.
 2. Enter password <5><4><1><3> and press <Enter>.
 3. Press <1> for calibration.
 4. Press <2> for direct scale read-out.
 5. This screen should show you the following:
 - It shows the weight. (Should be "0" for empty. If you place a known weight on the hopper, the number should increase proportionally.)
 - It should show you whether the mixer is in high level. (Lets you check for false high level readings.)
 - It should also provide a set of A to D's. (A to D's are your analog to digital bit read-outs.) The load cell span is from 0 to 4095. If this number will not change while applying pressure to the load cell or if the number is close to 4095, you have a problem with your load cell.
 6. Press <Backup> until reaching the first start screen.
- ***Anything in the Diagnostics Menu that is not covered here is in the Detailed Controller Setup Section***

5-6 Controller Mode Setup

Setting up a recipe

1. From the <1> start screen press <2> twice for recipe setup.
2. Enter password <5><4><1><3>.
3. Press <Enter> to select recipe formats ("EZ", Percentage or Parts format).
4. Press <Backup> to reset to the last screen.
5. Turn on the hoppers you wish to use (or label them in "EZ" format Color, Regrind, Natural, or Additive) by pressing the corresponding numbers.
6. Press <Backup> to reset to the last screen.

7. Select your desired metering order (What hopper puts material in 1st, 2nd, 3rd, etc.)
8. Press <Backup> to reset to the previous screen.
9. Select <1> twice to enter the recipe, follow setup instructions on screen to enter recipe.
10. Press <Backup> to reset to the previous screen.
11. Select <3> to set batch size. Set the batch size so the weigh hopper is full. (This will vary depending on material bulk density.)
12. Press <Backup> to reset to the previous screen.
13. Recipe entry is complete.
14. To start blender press <Start> or <1>.
15. If you pressed <1> you will be able to select weigh every batch or every second, third batch, etc. This allows you to weigh one batch then the following batches will be made off time. This allows the blender to run faster, but not as accurately.

Other questions regarding features are answered in the Detailed Control Setup Section

5-7 Color Change

The color change procedure is meant for use with the basic OS/OA Blender. This procedure assumes that the color component of the blend is in an additive ingredient hopper (#2, #4, #5, or #6).

Note: The blender must be stopped to make color changes. The processing machine can operate on virgin material only during this procedure with an optional quick color change bypass tube that can be installed to bypass the blender. Contact the factory for details.

1. Disable and clean any color loading equipment. Please refer to the loading equipment manual for any clean up recommendations.
2. Using the blender <EOC> key, put the blender in stop mode. After the cycle has completed, switch <OFF> the main power switch and unplug the blender power supply.
3. Open the upper mixer access door. This shuts off air to the blender circuit by deactivating the master air valve. Then unplug the quick disconnect from the air supply hose to the blender to further ensure that no air pressure is supplied to the blender.

WARNING!



- Always unplug the main power cord.



- Always disconnect the air supply to the blender.

...prior to performing any operations inside any access areas of the blender where there are moving parts.

4. Remove the weigh hopper by unplugging the air line disconnect fitting, holding the dump valve closed, lifting the hopper to clear the load cell brackets, and gently pulling the weigh hopper out of the blender.

Important!



To reduce the chance for damage to delicate load cells, use care when lifting the weigh hopper off load cell locating tabs and when reinstalling the weigh hopper on load cell brackets.

5. If you want to catch the color, use a small plastic pail or chute to collect the material from the slide gate assembly. Reach up inside the blender to the color slide gate and push it open. At this point, there should be no air pressure on the blender, and the slide gate should move easily. Drain the color out in the bucket. HydReclaim normally provides a JIT (Just in time) approach to the minor ingredients, so that a minimum amount of material is held in the blender so that color changes can be made easily.
6. If any other ingredients need to be changed for the next recipe, simply drain the larger hoppers with the drain tubes provided on the side of the hoppers. When the material level is below the drain tube, open the slide gate manually to dump the rest of the material. If you wish to speed the emptying process, material can be manually drained out of the slide gate assembly into a dump chute or bucket, while draining from the drain tube.
7. Using a vacuum cleaner or air hose, clean out all the hoppers that have been emptied. Always start at the uppermost part of the blender and work downward to prevent dust and pellets from falling into an already cleaned area.

Note: The auger metering assemblies on OA blenders can be removed after the hoppers above them have been drained.

8. Clean the weigh hopper and mixer assemblies on the blender using a vacuum cleaner. The mixer agitator is removable for cleaning if desired.
9. Reinstall any metering units that were removed from the blender during clean out.
10. Reinstall the weigh hopper using care to center the hopper on the load cells on the weigh hopper bracket.
11. Load the blender with new material.
12. Restart the unit with the new recipe.

Warning!



Always disconnect and lockout all electrical power and pneumatic (i.e. compressed air) sources prior to servicing or cleaning any HydReclaim product, including all OS/OA Series blending systems. Failure to do so may result in serious injury or death.

5-8 Additional Operation Features

5-8-1 Why Blender Calibration is Necessary

The load cells on the OS/OA are factory calibrated. Since the load cells can be subject to shock loading during shipping, moving, etc., we recommend that they be recalibrated.

The heart of the OS/OA blending system is the **load cell** with the supply calibration weight. They monitor the weight off each ingredient added to the blender weigh hopper. Since load cells are reading the actual material weight that is metered by the feeders, the proper calibration of these load cells is essential for the correct operation of the blender. This calibration must be performed upon initial installation and startup of the blender. **They should also be checked periodically with a calibration weight to ensure that they have not been damaged in the normal routine of removing and replacing the weigh hopper for cleaning, color changes, etc.**

The calibration of each load cell is accomplished by using two reference points on the output of the load cell scale. The first of these points is known as the "Tare Weight". This is the weight of the empty hopper assembly on the load cell. This is also known as the zero weight point (starting point) of the scale. This zero or starting point must be initialized with an empty weigh hopper. There must be no binding or leverage put on the load cell.

The second weight point used in the load cell calibration procedure is a known amount of weight for the weigh hopper. A calibration weight is provided with all OS/OA blending systems. The calibration weight is stamped with its actual weight on top. If this is not available, any object with a known weight accurate to the nearest 1/100th of a pound, in the 2 - 10 lb. range, proportional to your size blender, will suffice. (The weight should be as close as possible to the maximum batch size you plan to run.) The weight will be in pounds, unless the blender is provided for metric operation. In the case of a metric blender display, the weight to be used is calibrated in kilograms.

Given the two weight points on the load cell scale, the controller should determine any other weight on the load cell span. This is limited to the maximum capacity of the load cell. The standard load cell used on these blenders have a span accuracy of 1/10%.

The maximum capacity of each load cell is clearly marked on top of the load cell. This value will be indicated in kilograms (1 kg = 2.2 lbs.).

5-8-2 Display Description (LCD)

HydReclaim's OS/OA blending system utilizes a standardized menu format. Throughout the menu structure, the top line of the display is used to provide the operator with menu information. The bottom line is used to provide the operator with possible key press options.

Main Menu: 1) Startup
Press number or <ENTER> to see more

A typical menu entry is shown in the figure above. The top line of the display includes the menu name, the menu item number and the menu function. Any time the "Main Menu" is displayed in the upper left portion of the display, and the "1" key is pressed; the startup function will be executed.

Please refer to the OS/OA menu structure in Section 5-4.

The menu tree shows the structure for a standard OS/OA blender.

When the unit is initially installed, the diagnostics menu will be used. Pressing the <5> key when in the menu shown accesses this menu. To gain access to the diagnostics menu, a password will be requested.

5-8-3 Weigh Hopper (Load Cell) Calibration

Enter the diagnostics menu as described previously. **See Section 5-3 for menu tree.**

The factory pre-calibrates the weigh hopper on the OS/OA blenders.

Menu #1 on the Diagnostics Menu is "Calibration". Press <1> to enter the scale calibration menu.

Once in Scale Calibration, the display will prompt the user to empty the weigh hopper and press the <START> key. Make sure that the hopper is empty, and then put the hopper back on line. The blender controller will read the load cell reading and use this setting as the Zero weight point of the weigh hopper with no material.

Important! It is *imperative* at this time that there is no mechanical binding of any kind on the weigh hopper. Adjust the load cell stops as described on page 45.



Once the zero weight has been set and the user has pressed the <START> key, the controller will indicate to the user to set the calibration weight on the scale and press the <START> key.

At this point, the calibration weight provided with the blender should be placed on the weigh hopper through the calibration slot. After this is done, press the <START> key.

Then key in the value that is stamped on the calibration weight, and press the <ENTER> key to enter the calibration constant value.

The controller will read the current value of the load cell and will use this and the Zero weight calibration to set the span of the load cell.

The controller will indicate the current amount of weight on the scale. The display will prompt the user to remove the calibration weight. It will remain at this display until the weight reading is lower than 0.5 lbs. or kilograms. The program will then return to the calibration menu, indicating that the scale calibration procedure is finished.

If for some reason the calibration of the load cell varies by 10% from the calibration originally done at the factory, the control will indicate that it has detected a calibration error. At this time, it is advisable to go back through the calibration routine in case an error was made. During this procedure, check the A/D calibration numbers that are displayed on the screen. If the calibration still varies more than 10%, the following display will be indicated to the operator.

LDC #x +/- 10 percent of Factory Setting
Press <EOC> to accept new values

If the user is certain there has been no error in calibration, and the calibration of the load cell is correct, press the <EOC>(End of Cycle) key to accept the new calibration. Note: This can be the result of shipping shock loading to the blender, and once re-calibrated this should not occur again, unless the load cell has been hit, moved, or overloaded during a cleaning process, etc.

Once the weigh hopper has been calibrated, it can easily be checked by going back into diagnostics under the calibration option, and then pressing <2> to enter direct scale read out to recheck the calibration weight reading.

5-8-4 Feeder Calibration

The calibration mode for a feeder can be set to TIMED which allows the slide-gate in an OS blender (or an auger in an OA blender) to remain open for the predetermined amount of time during the batching process. The feeder calibration routine is used to calculate the dispense time for every feeder that is set for TIMED calibration mode.

After entering the Diagnostics menu, the user must select #1 for calibration and then item #3 to gain access to the Feeder Calibration menu. Select the feeder number of the feeder to be calibrated and the slide gate opens (or auger motors run). Press the feeder number again to close the slide gate (or stop auger motor). In this process, the amount of weight is recorded and the amount of time is calculated. This establishes a weight to time relationship, for actual time calculations for a feeder in recipe. Usually, the calibration needs to be carried out for a couple of cycles before the controller 'learns' the accurate dispense time.

5-8-5 Mix Timer

The mix timer is the amount of time that the mix motor will mix the material after it has entered the mixing section of the OS/OA blender. The timer has a range of 1 to 999 seconds.

To set the value of the mix timer, the user must gain access to the Diagnostics Menu. After entering the diagnostics menu, the user must select item #2 (Mixer Control).

The mixer control menu has (4) options, the first and second of which are used as diagnostic tools to turn the mixer motor off and on to check operation.

The third option of the Mixer Control Menu is the Mix Timer. Selecting #3 from this menu will allow the operator to view the current time setting for the mix timer and to adjust it as needed.

The mix timer is set to a default time of 10 seconds. This time can be adjusted up or down depending on the amount of mixing needed for the materials being blended.

It is recommended that the mix time be held to the minimum, as segregation can occur from over-mixing if the material bulk density and pellet configuration varies with materials in the particular blend being processed.

5-8-6 Re-Mix Timer

In some applications, the OS/OA blender will require the use of the re-mix timer. Some materials tend to separate if they are mixed too long. This is possible when a processing machine is running at a rate significantly below the capacity of the blender.

With external vibration, the heavier pellets will tend to flow to the bottom of the mix chamber before the lighter material. This will occur even though the mixer is in a static mode. By re-mixing occasionally, this situation will be prevented.

The re-mix timer will start another mixing cycle if the blender has been idling long enough for the re-mix timer to time out. The re-mix timer may be set from 1 to 999 seconds. Setting the re-mix timer to zero will disable this function.

If the re-mix timer is disabled, the controller will run only a single, timed mix cycle after each dump of the weigh hopper.

To view and change the value of the re-mix timer, refer to the diagnostic menu. Then select item #2 (Mixer Menu) and then select item #4 (Re-Mix Time). The re-mix timer default value is factory preset at zero.

5-8-7 Mixer Options

Press the “Backup” key when in mixer options to set the following options:

Intermittent Mixing Option This mode of operation turns the mixer on only during dumping and during the re-mix time set into the control to jog the mixer during high level mixer operation.

Continuous Mixing Option This mode of operation turns the mixer on after initial startup and will continue to run continuously, unless the remix time is set to jog the mixer during high level mixer operation. This option is used for sticky materials that tend to bridge and block off the mixer discharge to the processing machine.

5-8-8 Weigh Hopper Dump Time

The weigh hopper dump time is the amount of time the weigh hopper's dump valve remains open to allow weighed material to exit the hopper and enter the mixer.

To view and change the current weigh hopper dump time, enter the diagnostics menu and select item #4 (Dump Valve).

The dump valve diagnostic menu will display (4) options. The first and second are used as diagnostic tools to open and close the weigh hopper dump valve manually.

The third option is the dump timer. The dump valve time has a default time of eight (8) seconds. This time can be adjusted to optimize the blender cycle time.

The timer should be set to close the dump valve shortly after the material has totally dumped from the weigh hopper. This time can vary due to material flow characteristics, and the size of the batch that is programmed into the blender control. Experimentation with this setting can allow the operator to determine the best cycle for the material being weighed.

5-8-9 Weigh Hopper Dump Delay Time

The dump delay time is the amount of time from the end of metering the last ingredient until the start of the actual dump cycle. The start of the dump cycle is marked by the opening of the weigh hopper dump valve. This value has a range from 1 second to 99 seconds. To view and change the current dump delay time, enter the Diagnostics Menu, select option #3 (Dump Valve), and then select option #4 (Dump Delay Time),

The default time is factory set at zero seconds. This delay time is used to start the mixer prior to dumping the material from the weigh hopper into the mix chamber of the blender.

5-8-10 Weigh Hopper Smart Dump

The Smart Dump feature, when enabled, allows the system to bypass the weigh hopper dump time setting and commence with the next batch cycle when the weigh hopper is empty. The system will monitor the weight in the weigh hopper and will automatically initiate the next metering batch weigh cycle when it senses the weigh hopper is empty. This feature is useful if a weigh hopper dump time can be inadvertently set too high.

To enter the Dump Cycle menu, first enter the Diagnostics menu by pressing <5> from the main menu. Enter the password and press enter. Next, enter the Operate Dump Valve menu by pressing <4>. The display will show the Operate Dump Valve menu. Press the <backup> key to move to the Smart Dump menu.

5-8-11 Weigh Hopper Dump Cycle

The dump cycle allows the weigh hopper dump valve to cycle, or open and close, a number of times prior to commencing with the next batch cycle. The setting allows from 1 to 4 dump cycles between batches (open and close cycles).

The normal and default factory setting is 1, meaning the weigh hopper dump valve will open at the end of the weighed batch and close after the batch is discharged into the mixer.

Setting the dump cycle to more than one cycle may be useful when blending high static, dusty material or those that have sticky tendencies. This will cycle the dump valve open and close to allow any material that may cling to the dump valve.

To enter the dump cycle menu, first enter the Diagnostics menu by pressing <5> from the main menu. Enter the password and press enter. Next, enter the Operate Dump Valve menu by pressing <4>. The display will show the Operate Dump Valve menu. Press the <backup> key to move to the Smart Dump menu. Press the <backup> key again to move to the Dump Cycle menu. Enter a dump cycle value and press enter. Please refer to the menu structure tree shown on page 51.

5-8-12 Feeder Alarm Status Flags

If a feeder encounters an error while metering material during normal operation of the OS/OA blender, an alarm signal is indicated to the operator. (This is not active until the cycle time is learned—material must be present in hoppers.) This feeder alarm occurs when the feeder has been metering but no material is being dispensed. When this condition occurs, one of three conditions can occur in the blender operation depending on how each feeder flag is programmed in this menu. Feeders are factory defaulted to (ACK) mode in Version 7.00 & newer software.

1. **(STP) Mode** In the stop (STP) mode, the blending system will continue to try to meter material to the weigh hopper and wait for the proper weight increase in the weigh hopper. During this time, the blending cycle is interrupted until the target weight is seen in the weigh hopper, and an alarm is turned on by the controller indicating there is a problem. This mode will ensure that an incorrect batch is not dumped into the mixer automatically by the blender due to lack of an ingredient. If the batch is manually dumped by the operator, it is the operator's decision whether to keep the partial batch or to dump it out.
2. **(RUN) Mode** If the alarm flag for the feeder is set to the run (RUN) mode, and no material is being dispensed during a metering cycle the blender will indicate a blending fault. The display will indicate the feeding error and the number of the feeding unit that is at fault. After the learned feeder time is elapsed, the feeder will turn off, and the rest of the ingredients in the recipe will continue to batch. Once the balance of materials has been metered into the weigh hopper, the incomplete batch of material will then be dumped into the weigh hopper, and the alarm is reset. This mode of operation is useful when blending regrind materials that are not always present during the blending cycle. This flag should only be used for non-essential ingredients that will not cause a product rejection if not present.
3. **(OFF) Mode** If the alarm flag for the feeder is in the off (OFF) mode, the blending system will not indicate a blending fault. If a feeder is metering with no material being dispensed, it will shut off and continue the batch with the rest of the ingredients. This mode can also be used for feeding intermittent supplied regrind materials, where an alarm is not wanted.
4. **(ACK) Mode** This mode operates similar to the STP mode above with the difference that it will require manual intervention (keypress) before it retries and continues to try to meter material to the weigh hopper. The metering gate also remains closed until the problem is resolved.

To toggle a specific flag when in the Alarm Status Flag Menu, simply toggle the mode by pressing the feeder key number. Press the <BACKUP> key to save the setup and exit the menu.

5-8-13 Feeder Metering Order

The HydReclaim OS/OA blender allows the user to set the ingredient metering order. In order to access the metering order menu, enter the Recipe menu (refer to the menu structure on page 51). Once in the recipe menu, select #3 option (Metering Order). This display will indicate the feeder number and the current order in which the ingredients are metered.

In order to change the metering order, simply press the feeder number you wish to change. The order number located on the display next to the feeder number is implemented. Once the desired metering order is displayed, simply press the <BACKUP> key to save the information and exit from the menu.

Important!: All feeders *must* be in the metering order. Do not have the same metering order number assigned to two feeders at the same time as the control will not accept the settings.



5-8-14 Remote Control Panel (RCP)

Note: RCP is an option that provides a second operator control.

This section describes the optional HydReclaim Remote Control Panel (RCP). The RCP is useful in situations when the access to the control panel is difficult or limited. This remote control panel may be located up to 300 cable feet away from the blender control panel. (Note: a signal amplifier may be required for long distances. Consult factory with actual application.)

The RCP provides the operator with all the functions of the standard OS/OA control panel. The keypad and display are identical to the blender panel.

Every OS/OA blender panel includes an RCP connection, and the RCP simply plugs into the appropriate connector on the back control panel. The RCP is an option to the blender and is not included with the standard blender.



5-8-15 Network Communications Baud Rate & I.D. Settings

The blenders baud rate is the speed at which data is transferred to and from the blender's communication port. The blender I.D. is the address of this blender on a network. The OS/OA is factory set up at 19,200 baud, with address I.D. 01.

In order to change the values, enter the diagnostics menu, go to option #6 and change the values accordingly. Baud rates available are 1200, 2400, 4800, 9600, 19200. Blender ID's can range from 1 through 255.

5-8-16 Additional Control Functions

The objective of this section is to familiarize the reader with the OS/OA blender recipe menus, run mode operation, run mode menus and displays. Upon the completion of this section, the reader will be familiar with the recipes and run mode displays that are available on one blender, including the recipe book and recipe storage facilities. Other items covered in this chapter are optional printer functions and report generation capabilities of the OS/OA blending system.

Sections in this section are:

- ***General Operation***
- ***Run Mode Display***
- ***Recipe Menu***
- ***Optional Printer Menu***

All personnel operating the OS/OA blending system should read this section of the manual ***before*** operating the blending system.

5-8-17 General Operation

The general operation of the OS/OA blending system is as follows: Once the system is properly installed and set up, the system will be ready for operation. Please see the Installation and Setup chapter in the manual for further information.

Once the OS/OA system is powered on, the unit will display the recipe screen (provided the recipe format is in "EZ" recipe mode). Using the arrow keys, the operator can either enter a valid recipe or choose a quick feeder clean out procedure.

5-8-18 Feeder Clean Out

(EZ Recipe Mode Only)

Any feeder in the OS/OA blending system can be emptied and refilled with a different material. To do a feeder clean out, the operator has to press the 'clear' key from the recipe screen (the first screen that appears on power up).

Quick Feeder Clean Out

Fdr #1: S-open C-close / Arrows for Others

The dump valve opens as soon as the 'clear' key is pressed. This easy feeder clean out option also serves as a means for emptying a batch that is held in the weigh hopper if <END OF CYCLE> is pressed during a run. Use the arrow keys to open/close feeder number 2, 3, 4, 5 & 6 and the <BACKUP> key to close the dump valve and return to the recipe menu. After entering a recipe, the operator will restart the blending system, putting it back in normal operation.

Important!



Before starting OS/OA blending systems, each ingredient hopper in the current recipe *must contain material!*

Once the operator initiates the run mode of operation, the blending system controller will begin monitoring the mixer high-level switch. Nothing will happen until the mixer high-level switch is uncovered. This tells the controller that the mixing chamber is capable of holding another batch of material.

Once the mixer high-level switch is uncovered, and the weigh hopper has dumped, the system will meter the ingredients from the supply hoppers, through the metering units, into the weigh hopper. Each component will be metered individually to allow accurate weighing of the material.

Each component is metered in the order specified by the "Metering Order" setup. See the Installation & Setup chapter for further details.

Once the final ingredient specified in the recipe has been metered into the weigh hopper, the controller will take a final weight reading of the weigh hopper. This will start the "Dump Time Delay" timer. (See Section 5-8-9). Once the dump delay timer has timed out, the controller will activate the weigh hopper dump valve, initiating the weigh hopper dump cycle.

The open weigh hopper dump door will allow the material to drop into the mixer section of the blender. If the dump delay is set, the mixer will start before the weigh hopper dump will open for the selected time.

The blender will set at rest until the high-level sensor in the mixing chamber is uncovered to start another weigh cycle. (Unless the Re-Mix timer is set to a value other than 0 and times out to restart the mixer to run for another mix cycle.)

5-8-19 Run Mode Displays

Run mode displays are the various messages and indicators offered to the operator throughout the run mode cycle. Once the blending system has been properly installed and set up with a valid recipe entered, the run mode portion of the blending system may be started.

The run mode is started by selecting #1 <STARTUP> from the main menu. After selecting #1 from the main menu, the operator will be given a small sub menu. See the figure below. This sub menu will allow the user to select an operating mode. The options on the sub menu are as follows:

- **Weigh Every Batch**
- **Every Other Batch**
- **Every Third Batch**
- **Every Fourth Batch**

Select Weighed Batch Interval
1=Every 2=Second 3=Third 4=Fourth

When a recipe is entered and the blender is started up, if any of the ingredients (slide gate or auger) overshoots by more than 100% of the target (the target amount to be dispensed), the software triggers the Metering Overshoot Alarm.

Metering Overshoot - Refer to Manual

This is an indication for the operator to use 'stroke-limiters' on the appropriate slide gate, or use a smaller auger or slower rpm gear motor to dispense smaller amounts of material.

5-8-19-1 Weigh Every Batch

This mode of operation weighs every component of every batch that is metered by the OS/OA blending system.

5-8-19-2 Every Second Batch

In the every second batch mode, the OS/OA blending system will weigh each component of the batch during one cycle and then run all components simultaneously the next cycle on a time basis that was learned during the weigh cycle. After an initial learn cycle, the blender will weigh every other batch and then run volumetrically timed metering every other batch. This allows for greater throughput of the blender.

Running in every other batch mode normally does not affect the accuracy of the blender to any great degree on consistent bulk density materials.

5-8-19-3 Every Third Batch

In the every third batch mode, the OS/OA blending system will weigh each component of the very first batch. The second and third batches will be metered using time. The augers are timed while weighing the first batch. The second and third batch will use the time measured on the first batch. This sequence will continue as long as the blender is running in this mode.

This allows for greater throughput of the blender, as the blender is running all the metering devices simultaneously. Accuracy in this mode is not as good as weighing every batch, but will be satisfactory in most applications.

5-8-19-4 Every Fourth Batch

In the every fourth batch mode, the OS/OA blending system will weigh each component of the very first batch. The second, third and fourth batches will be metered using time. The augers are timed while weighing the first batch. The second, third and fourth batch will use the time measured on the first batch. This sequence will continue as long as the blender is running in this mode.

This allows for greater throughput of the blender, as the blender is running all the metering devices simultaneously. Accuracy is not as good as weighing every batch but will be satisfactory in most applications.

Note: During normal operation, no alarm will sound if you run out of material during a timed batch. You will get an alarm that says “Shortened batch occurred.”

Once the operator has chosen the desired run mode, the blending system will begin to meter and weigh the first batch of material. The first display the OS/OA will indicate to the operator after beginning the run mode will be “Average Rate: xxxx Lbs. or Kgs.”

**Checking Mixer High Level
Average Rate: xxxx Lbs or Kgs**

This display indicates to the operator that the computer is checking the status of the high level sensor in the mixer.

The level sensor is located on the back wall of the mixer chamber. If the sensor is covered with material, the indicator light on the back of the sensor will be lit. In addition, the display will change to the “Mixer High-Level” display.

Once this sensor is uncovered, the indicator lamp on the back of the level sensor will go out and the blending system display will once again read, “Checking the Mixer Level.” This level sensor must be uncovered for approximately 1 - 2 seconds to indicate to the control that there is room in the mixing section to accept a batch of material.

When the controller has determined that the mixer is ready for an additional batch of material, the controller will begin metering material into the weigh hopper assembly.

**Mixer High Level - Current Recipe
Average Rate: xxxx Lbs or Kgs**

- Or -

**Mixer High Level - Recipe # yyy
Average Rate: xxxx Lbs or Kgs**

5-8-20 Manual Mode

From the run mode sub-menu (described in section 5-8-19), the operator may enter the manual mode of operation. Manual mode is selected by pressing the <0>. This mode will run the blender on timed cycles in the event of load cell failure.

Note: Manual backup mode should not be used on a fully functioning blender.

Upon entering manual mode, the operator will be prompted for the use of the weigh hopper dump valve. The options are “yes” or “no.” If the dump valve is used (YES), the material will be collected in the weigh hopper and then dumped into the mixer as a batch. If the dump valve is not used (NO), it will remain open at all times and simply flow through the mixer as it is metered.

After the selection on the dump valve is made, the operator will be asked about the use of the mixing section. The options are “yes” or “no.” If the operator uses the mix motor (YES), the mix motor will run using the mix timers set up in the setup chapter. If the operator chooses not to run the motor (NO), the mixer will never turn on.

Once the mix motor section is selected, the operator will be prompted to enter metering times for each feeder that is running ***in the current recipe***. These feeder times may be entered in terms of the nearest 0.1 seconds.

Once all the feeder times are entered, the OS/OA will continuously run batches of material and cycle off the high-level proximity switch.

5-8-21 Standard Run Time Displays

While the blending system is in operation, there are several displays available to the operator. These displays are selected simply by pressing the <ENTER> key when the unit is running. The default display shown when the blender is in run mode is the dynamic weight reading display.

The weighing display indicates by feeder number, the amount of material metered into the weigh hopper assembly by that particular feeder. This display is updated after each component dispenses its specified amount. The ingredient weights (Unit Value) are in pounds, unless the metric display is selected.

Pressing the <ENTER> key when in the default run mode display will toggle to the next display, which is the Inventory Display. *This can be done at any time, but if the blender is in a critical mode such as dumping, and updating inventory, etc., it may ignore the keystroke. Simply press the <ENTER> key again, the display will scroll.*

This display indicates the amount of material in pounds that has been used by each feeder of the recipe. It is important to note that the weights are rounded off to the closest pound. On minor ingredients, several cycles may have to occur to show an inventory number.

Pressing <ENTER> again will scroll to the “Percentage Screen”:

The Percentage Screen uses the blender inventory numbers shown on the Inventory screen to calculate the percentages for each ingredient. It is important to zero the inventories when a recipe is changed to have this screen accurately reflect the current percentages of the current recipe.

Note: Blender inventories must be cleared when the current recipe is started to show accurate percentages for the currently running recipe.

To clear inventories, press the “CLEAR” key (3) times when in Run mode.

Pressing the <ENTER> key again will scroll to the final run mode display. This display is a summary display that shows the total inventory, the time for the last batch, and the average rate of the blender.

Each selected screen will display for approximately 15 seconds, and then revert to the weight runtime display.

5-8-22 Recipe Menu

Note: Refer to the menu structure in section 5-4 for more information.

The OS/OA System contains several operator friendly recipe menus. This section of the manual lists these recipe menus:

- Recipe Set Up
- Recipe Format
- Feeder Metering Order

To enter the OS/OA Recipe menu, select Item #2 from the main menu.

Recipe format option is used to select one of the three available formats: “EZ” Mode, Percentage Mode or Parts Mode. (“EZ” mode is the default setting preset at the factory.) In addition, every feeder in the blending system can be assigned as either ‘Used’ or ‘Off’ (Percentage or Parts recipe formats), or as a material type (REGRIND, COLOR, NATURAL, ADDITIVE or UNUSED) in “EZ” Mode recipe format.

The feeder metering order is useful when the dispensing sequence needs to be changed. For more details on this setting, refer to page 65.

Recipe Set Up Menu:

- “EZ” Recipe, Percentage or Parts
- Recipe Book (Storing and Retrieving Recipes)
- Batch Size
- Inventory Shutdown

5-8-23 Current Recipe Menu

Throughout the menu structure, the top line of the display displays input and current setting data while the bottom line will indicate instructions for keystrokes. In the Recipe Set Up menu shown above, pressing Item #1 will display the Current Recipe menu:

Note: *The blender always runs the percentages shown in the Current Recipe menu display.*

5-8-24 “EZ” Recipe Menu

The “EZ” menu structure allows recipes to be entered and adjusted by the arrow keys on the panel face (for 2 to 6 components), convenient for use in the injection molding industry.

After an “EZ” mode is selected, the screen will change to the label selection screen.

The first (component #1) material hopper on the blender is always designated “NAT” for natural (virgin) and cannot be changed. The other ingredient labels can be scrolled by pressing the hopper number. They can be scrolled to read “NAT” (natural), “RGD” (regrind), “COL” (color), “ADD” (additive) or “OFF” (unused). The selected label will be displayed for the ingredient hopper or, if “OFF” is chosen, the ingredient will be eliminated from the recipe and will not be shown on the display.

Component #3 is designed to handle regrind and most models come equipped with a larger, square gate to reduce the likelihood of bridging. If regrind is being used, it should always be run through component #3. If you don’t have regrind, another major ingredient can be run through component #3.

The ingredient labels (names) selected will be displayed on the run menu so the operators will know what material is being blended. The natural or virgin (component #1) ingredient will not be shown on the recipe menu.

If color or additive is designated, the weighed ingredient will be metered as a percentage of the natural or virgin.

If regrind is designated (component #3), the ingredient will be metered as a percentage of the total batch. It is assumed the regrind has been generated from pre-blended production, and already contains the same color and/or additives.

Please see next page for example calculations (setup).

Example calculations of a five (5) -component blend in “EZ” mode

Virgin (NAT): ???
Color (COL): 5.00% - of virgin component
Regrind (RGD): 30.00% - of total batch
Additive1 (ADD): 2.00% - of virgin component
Additive2 (ADD): 1.00% - of virgin component

Batch Size: 10.00 lbs.

Total available: 100.00%
Regrind: 30.00%

Balance: 70.00%

Virgin + Color + Additive 1 + Additive 2 = 70.00%

Virgin + (5% of virgin) + (2% of virgin) + (1% of virgin) = 70.00%

Virgin + (5/100 x virgin) + (2/100 x virgin) + (1/100 x virgin) = 70/100

100 virgin + 5 virgin + 2 virgin + 1 virgin = 70

108 virgin = 70

Virgin = 70/108 = 64.81%

Virgin = 64.81% of batch

Color = 5% of 64.81% = 3.24% of batch (5% of virgin)

Regrind = 30% of batch

Additive1 = 2% of 64.81% = 1.30% of batch (2% of virgin)

Additive2 = 1% of 64.81% = 0.65% of batch (1% of virgin)

Virgin + Color + Additive 1 + Additive 2 + Regrind = 100% 64.81% + 3.24% + 1.30% + 0.65% + 30.00% = 100%

5-8-25 Batch Size Menu

The OS/OA blending system is a gravimetric batching system. The blender will weigh a preprogrammed batch of material each cycle. This batch size is determined by the blender's weigh hopper size, the current recipe, and the bulk density of the ingredients.

Because the blending systems must handle a wide variety of materials, with varying bulk densities, the actual amount of weight of material the weigh hopper will hold can vary dramatically from application to application.

The weigh hopper size selected should be one that approaches the maximum capacity of the load cells (A/D reading in diagnostics of a maximum of 4095) and does not allow the weigh hopper to physically overflow. During the initial setup of each blender, the weigh hopper size setting should be checked to ensure that the weigh hopper is not overflowing due to a large percentage of light weight regrind, etc. The batch size will vary from model to model. The bulk density of the material being blended will also affect the batch size.

Important! *If running a high percentage of lighter density regrind. Set the batch size so that the mixer does not overflow, preventing the weigh hopper from fully dumping when operating in "Batch Ready Mode".*



5-8-26 Auto Inventory Shutdown

In many applications, the user of the OS/OA System produces large runs of blended material on the same recipe during production. An example may be a 40,000-lb. run of a certain specification plastic extrusion. Others may wish to fill a 1,000-lb. gaylord box in a central blending application. In either case, HydReclaim has provided a means to automatically stop the blending system when the blended material has reached a preset total blended weight. This is known as Automatic Inventory Shutdown.

When the Auto Inventory Shutdown value is reached, the blender will finish the current batch of material. It will then stop and display to the operator that the inventory value has been reached. Additionally, it will flash an alarm and wait for operator attention.

To enable this feature, simply enter a desired shutdown weight value into the Auto Inventory Shutdown display line, following the keystroke instructions on the second line. If this feature is enabled, then make sure that inventory is cleared by quickly pressing <CLEAR> three times when the blender is started up to run.

To disable this feature, simply enter a zero (0) value.

5-8-27 Recipe Book (Storage) Menus

In many applications, it is favorable to hold several recipes in the memory of the blending system. The OS/OA has provided for this by incorporating HydReclaim's recipe book software.

The recipe book is capable of holding 100 different recipes. These may be stored and recalled by number. ***During this section of the manual, the operator may wish to revert to the Menu Tree Diagram on page 51 of this manual.***

It is important to note that the recipe book only stores and recalls recipes. **The blender will operate on the current recipe only**, so a recipe must be recalled from the book to the current recipe for it to be active.

Each recipe stored in the recipe book may be displayed, modified, or even printed (if equipped with an optional printer). Only the current recipe will be blended.

Always verify that the Current Recipe is showing what you want to run, and that the correct recipe has been downloaded from the book.

The recipe book section contains the following Items:

- ***Save Current Recipe to the Book***
- ***Load from the Book to the Current Recipe***
- ***Delete a Stored Recipe***
- ***Show Valid Stored Recipes***
- ***Display a Stored Recipe***
- ***Print a Recipe***

5-8-27-1 Save the Current Recipe to the Book

The save current to book function allows the operator to save the contents of the current recipe to the recipe book under a desired number.

Upon selecting this function, the operator will be prompted for a reference recipe number. This may be any number from 1 to 99.

The assigned recipe number will be used for all further references to this recipe until deleted. The operator should be familiar with the recipe numbers used. We suggest keeping a loose-leaf notebook with 100 tabbed pages as a reference to what is kept in the blender so this can be the standard for all blenders in the plant, etc.

5-8-27-2 Load a Saved Recipe from the Book

The load from book function allows the operator to retrieve a previously stored recipe from the recipe book and install it into the current recipe menu. This will overwrite the current recipe, so make sure that it has been saved to the book before installing a new recipe in its place.

Note: If replacing the current recipe with one that is downloaded from the Recipe Book, *make sure that the previous recipe has been saved*, as it will be overwritten by the new downloaded recipe.

5-8-27-3 Delete Recipe

The delete recipe function is used to eliminate old or outdated recipes from the recipe book function. This function will prompt the operator for a recipe number. Once a valid recipe number is entered, the operator will be asked once again to verify this operation. Once a recipe number is deleted, the contents of that recipe are lost. The recipe number may be used again in the future for new recipes.

5-8-27-4 Show Valid Recipes

The show valid recipes function is incorporated to display all of the recipe numbers in the recipe book that contains valid values. The display may contain several pages of information. This will require the operator to page through the displays to determine if the desired recipe is already in use. Scroll the display by pressing the "ENTER" key.

5-8-27-5 Display Recipe Contents

The display recipe function is used to verify the contents of a recipe number before it is loaded from the recipe book. This function will prompt the operator for the recipe number desired. Once a valid recipe number is entered, the display will indicate the contents of the stored recipe in percentages.

5-8-27-6 Print Recipe

The print recipe function is used to verify the contents of a recipe number before it is loaded from the recipe book. This function will prompt the operator for the recipe number desired. Once a valid recipe number is entered, the contents of the stored recipe in percentages will be sent to the printer. This function is only useful when the printer option is incorporated on the OS/OA.

5-8-28 Printer Menu

The OS/OA blending system may be equipped with a printer, so a printer menu is available to the operator. This menu is displayed in the OS/OA Menu Tree shown in Section 5-4 if the printer option is turned on. The printer menu is accessed by selecting #4 from the main menu.

The printer is used to obtain batch ticket and inventory information. A batch ticket contains the time and date information, the job number, the actual blend percentages and the accumulated inventory numbers.

The printed inventory might not match the percentage shown, as the percentage shown is the actual blender percentage running the current recipe. The inventory, depending on when it was manually cleared, may or may not reflect the current recipe inventory. Some customers like to run an accumulated inventory on ingredients coming from silos, etc., even though several different recipes have been run on the blender. Others like to clear the inventory every time the recipe is changed. The blender gives the operator the choice of either method.

The Printer Menu contains seven (7) options:

- ***Batch Interval***
- ***Job Number***
- ***Print Inventory***
- ***Display Time & Date***
- ***Set Time***
- ***Set Date***
- ***Test Printer***

Note: If Printer option is enabled (turned on) and a printer is not connected to the blender, the throughput will be significantly reduced!

5-8-28-1 Batch Interval or Timed Interval Printout

The Batch Interval item under the printout menu allows the operator to set the number of batches between printouts or a timed interval on the printouts.

Time Printout

When first entering the menu, the display will ask you for a decision on whether the printout should be timed or by the number of batches. The <START> key is used to toggle between the two options.

If you want to print out on a time format, press the <ENTER> key. The screen will then prompt to set the time interval in hours.

If you want to change the hours between print outs, press the <START> key to change the value to the desired time. Then press <ENTER> to keep.

The screen will then scroll to a screen to program in when you want to start the timed printouts. Simply select the time (24-hour clock) and enter.

Print Out Scheduled At : 0:00
Press START to Change, ENTER to keep

Batch Printout

If you wish to print out the inventory information on a batch interval basis, then simply enter in the desired batch interval and the printouts will occur each time that the number of batches programmed is produced. To set the batch interval, press <START> to change, enter the number of batches between printouts, and press the <ENTER> key.

5-8-28-2 Entering the Job Number

Some applications call for tracking a job number. The OS/OA System will provide this by allowing the operator to assign a job number. This job number may be up to eight digits long. It is held in memory and will be printed out on each and every batch ticket until it is changed to the next job number. This number is simply a reference number for the operator, or management.

5-8-28-3 Print Inventory

The print inventory menu item is used to produce on demand, inventory printouts. Before selecting this item, be sure that the printer is properly connected and ready. This function will generate an inventory printout with the current date and time information.

5-8-28-4 Display Time and Date

The display Time and Date item on the printer menu is used to verify the current time and date information.

5-8-28-5 Set Time

The Set Time item located in the printer menu allows the operator to set the OS/OA's internal time clock. The clock data must be entered in the traditional:

HH = Hours
MM = Minutes
SS = Seconds

5-8-28-6 Set Date

The Set Date item located in the printer menu allows the operator to set the OS/OA's time clock's date. This internal clock must be entered in the traditional:

MM = Month
DD = Day
YY = Year (last 2 digits)

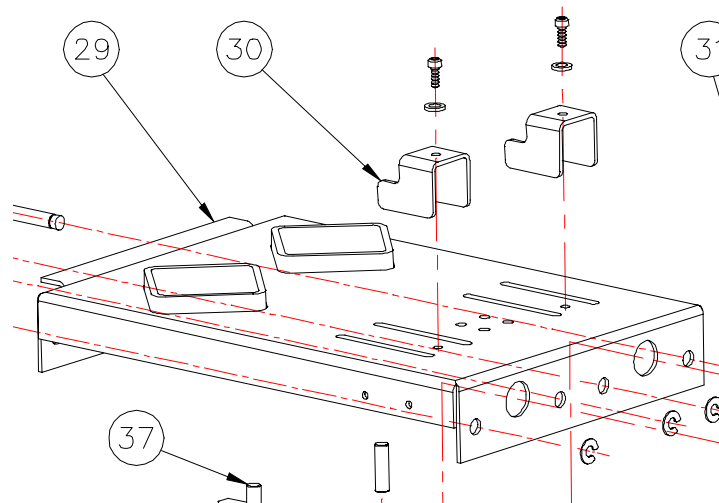
5-9 Stroke Limiters for Metering Gates

Stroke limiters are supplied on components 1 through 4 with all OS blenders to allow standard metering gates to meter small amounts of low percentage additive materials.

Generally, the stroke limiter (Item 30) is not required on major ingredients (usually number 1 and 3) and should be removed. If they are left in place, throughput of the blender will be reduced.

To install the stroke limiter, drop it into the double slot on top of the gate assembly and secure it in place with the socket head screw that is provided. Be sure to use the lock washer to prevent the stroke limiter from coming loose.

Stroke Limiter



6-1 Work Rules

The installation, operation, and maintenance of this equipment must follow all applicable work and safety codes for the location where it is used. This may include, but is not limited to, OSHA, CSA, NEC, SPI, and other local, national, and international regulations. In addition, you must observe the following specific rules:

- ☑ Read and follow these instructions when installing, operating, and maintaining your HydReclaim equipment. If the instructions become damaged or unreadable, you can obtain additional copies from the HydReclaim Service Department at AEC, Inc.
- ☑ Only qualified people may work on or with this equipment.
- ☑ Work only with approved tools and devices.
- ☑ Turn off and lock out the power switch when maintaining or servicing your HydReclaim blender system.
- ☑ Disconnect and lock out main power before servicing electrical equipment.

6-2 Maintaining Blenders

HydReclaim blenders need periodic maintenance to provide long dependable service. Check these elements regularly:

- Check functionality of safety circuit daily.
- Maintain proper air pressure and drain water from trap assembly on regulator – as required.
- Periodically lubricate slide gate rails.

WARNING!



Always remove plug and disconnect power before servicing blender.



Always read operating manual before operating or servicing blender.

6-3 Control Setup

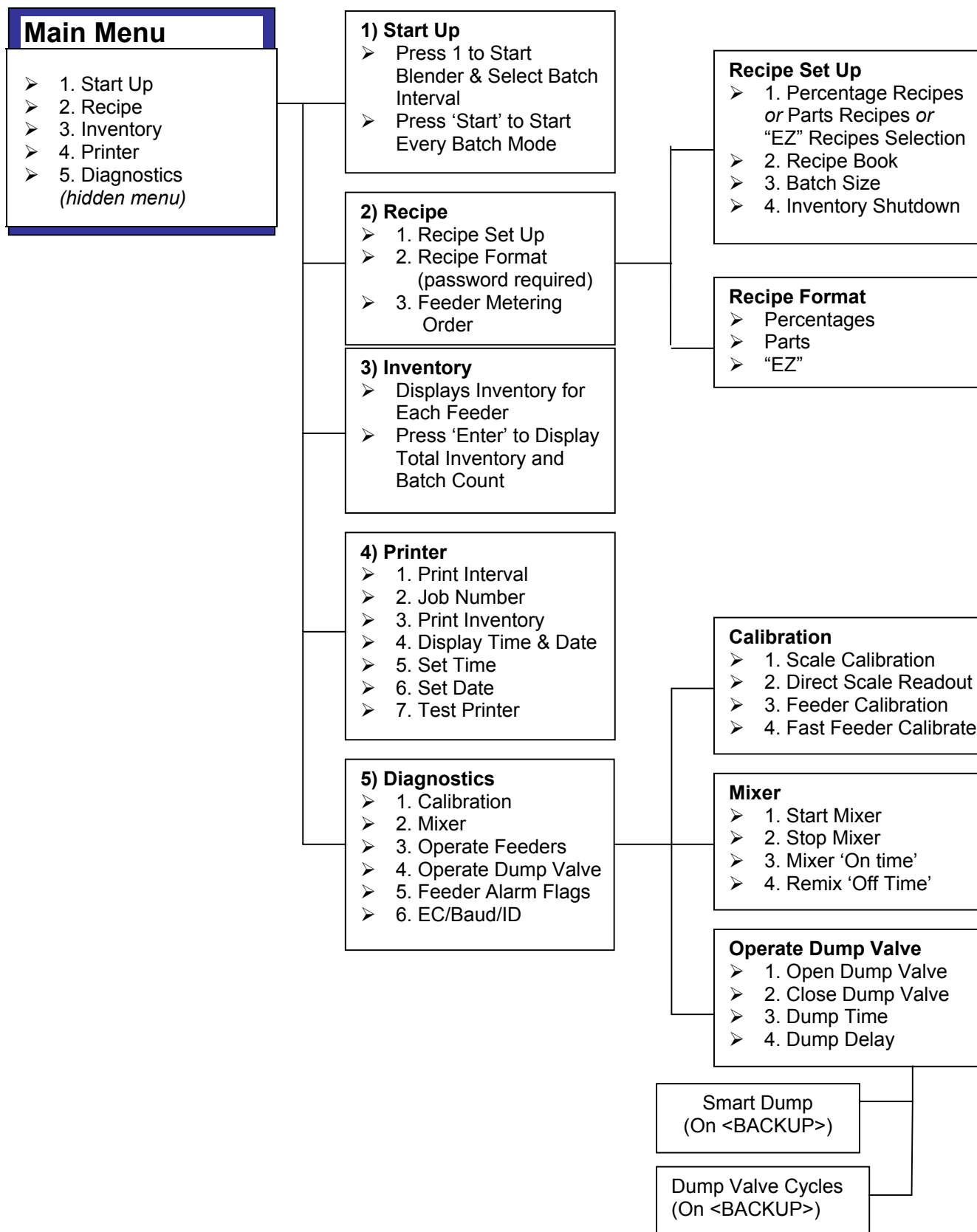
This section describes the proper setup of the OS/OA blending system control parameters. These parameters are operator changeable; however, these items should only require setup during the initial installation. Only authorized personnel should change them. For security reasons, the menu that is used to access these parameters is password protected. **The factory-installed password to gain access to the diagnostic menu is located on the last four supervisor pages of this manual. It should be removed if the manual is to be kept on the production floor.**

Many of the variables and setup parameters have been preset at the factory and do not need to be changed. However, this section of the manual will address all of the OS/OA setup parameters that were available at the time of printing. The purpose of this is to familiarize the reader with all the setup parameters and their usage.

The following parameters are discussed (factory defaults shown):

<u>Parameter</u>	<u>Default Setting</u>
• Scale calibration	Factory Calibrated
• Mix timer	10 Seconds
• Re-mix timer	0 Seconds
• Weigh hopper dump timer	8 Seconds
• Weigh hopper dump delay	0 Seconds
• Feeder alarm flags	All ACK (Acknowledge) NEW in Version 7.00
• Metering order	(in sequence – for number of hoppers in blender)
• Network Communication baud rate	19,200
• Blender ID	1
• Recipe format (percentage/parts/EZ)	“EZ”
• Printer functions	Off
• Extrusion control	Off
• Batch Ready feature	Off
• English/metric units	English
• Security features (LKR, LKD, LKRD, PSWD, None)	None
• Menu/Auto startup mode	Menu
• Smart Dump feature	Off
• Mixer option (Intermittent/Continuous)	Intermittent

6-4 Optimum OS & OA Series Blender Menu Structure



6-5 Mechanical

The mechanical design of the blender is very simple and very little maintenance is required. The only moving parts are the metering gates, weigh hopper dump valve and mixer agitator. The following maintenance is suggested:

Daily

- Inspect blender for any loose parts-tighten them immediately.
- Verify quality of compressed air supply.
- Verify mixer door is properly latched.

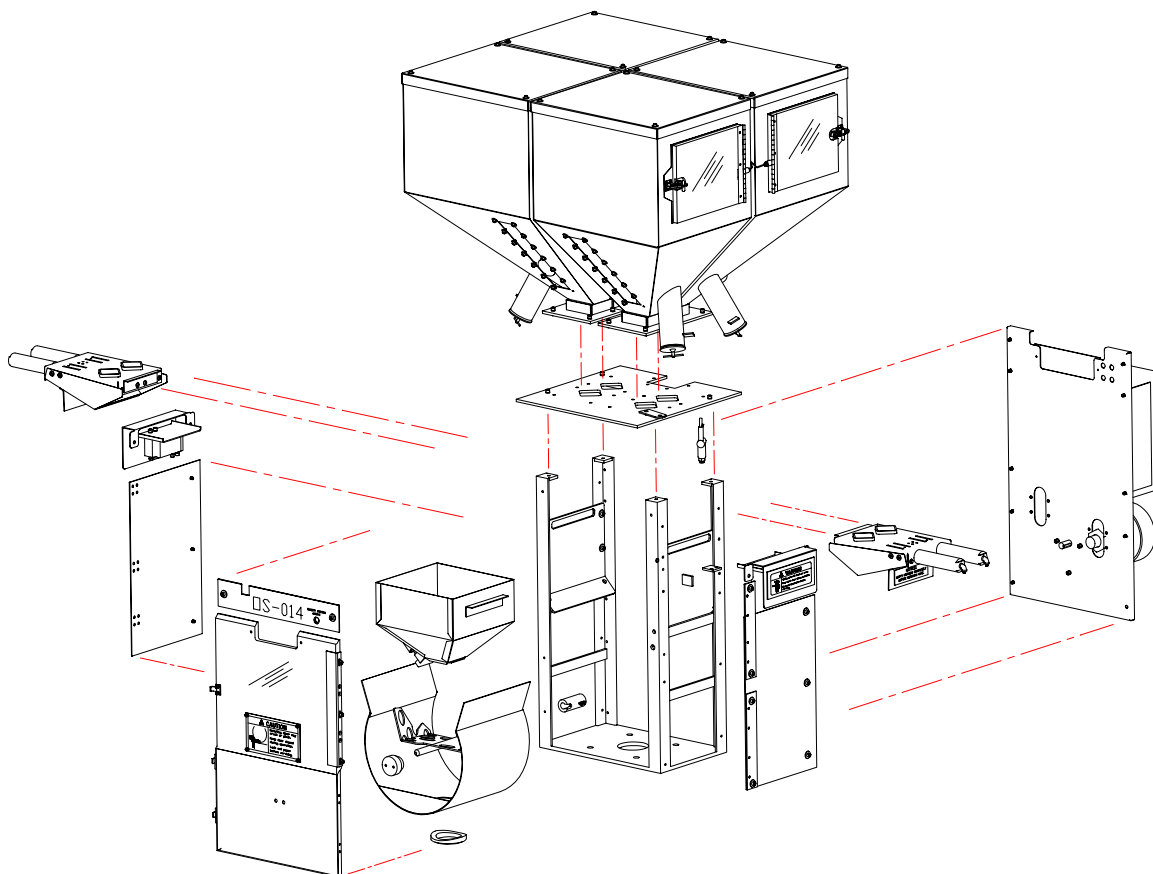
Weekly

- Inspect metering gates for proper operation.
- Recalibrate blender

Monthly

- Inspect air regulator and air safety circuits, if equipped.

Typical Model OS Assembly Overview



6-6 Electrical

6-6-1 Description and Objectives

This section is designed to give the operator an overview of the electrical system that controls the OS/OA blending system. Since the OS/OA's control panel is a self-contained pluggable item, seldom will a maintenance person be required to enter the control panel. For purposes of understanding the system it is advisable that the maintenance personnel be familiar with not only the internal workings of the control panel, but also with the input and output signals to the OS/OA unit.

This section includes the following:

- Internal components of the control panel
- Input signal to the control panel
- Output signals from the control panel

6-6-2 Internal Components of the Control Panel

Note: See Section 12-2 for complete electrical schematics.

This section describes the internal components of the OS/OA blending system control panel. It is not the intent of this section to completely familiarize the reader with the details on industrial control panel construction or standards, but simply to familiarize the reader with the major components inside the OS/OA control panel.

The customer must supply 110/1/50 or 60 (or 220/1/50) via wires L1 & L2 (N). Please insure that the earth ground connection is properly connected to an established earth ground.

"Power on" is indicated by a lighted on/off switch.

The control panel power is routed to the internal power supply, after going through the safety circuit. The CPU board's power supply is designated as PS-1 and located on the back plate of the control panel. PS-1 is a multi-voltage switching power supply. Its outputs of +5 Volts DC and +12 Volts DC are used for the main CPU board and the optional remote control panel (RCP), if it is installed. The power supply also has optional voltages of -12 Volts DC and -5 Volts DC, which are currently not used. (+5V should be set to +5.3V)

Located on this power supply is the main control fuse. This control fuse is on the 110-volt side, or the input side of PS-1.

Below the power supply is the main CPU board. This CPU board is designated as PC-1. This device contains all of the control logic for the OS/OA blending system. It is truly the heart of the OS/OA System.

Input to the CPU can be found at the +5 volts that is used to power up the CPU, also connected to the main CPU is the 16 key operator keypad. This keypad is located on the front door of the control panel. This keypad is used to obtain all operator input. Located right beside the keypad on the figure is the 2-line by 40 characters LCD (liquid crystal display). This display is used to provide all information to the operator.

Directly to the left of PC-1 on the figure is located the hardware key. This hardware key is used to determine the software access code to ensure that the software is not copied and duplicated by others than HydReclaim.

To the right of PC-1 on the wiring diagram figure, there are several solid-state relays. These devices are used to convert the CPU logic level outputs from the +5 volt DC signals to the 110 volt AC signals required to operate the solenoid valves and augers on the blender. These solid-state relays are designated as SSR-1 through SSR-7.

Located below the solid-state relays is a 110 volt input module this module is responsible for changing the 110 volt input signal from the high-level proximity switch into + 5 volt DC signals for the CPU. The module is designated as SSR-8.

6-6-3 Input Signals to Control Panels

The OS/OA blending system has two main input signals that it uses from the blending process: the mix hopper high level signal and the weigh hopper load cells. This, of course, does not include the operator keypad input.

The mix hopper high level signal is generated by a proximity level sensor located in the right hand portion of the mixer chamber (viewing from the mixer door). This sensor requires 110 volts AC and acts as a normally open switch. When there is no material covering the front of the sensor, the circuit is open. If material covers the front of the sensor, the circuit closes. This closure causes SSR-8 to energize. SSR-8 then converts the 110-volt signal to a +5 volt DC signal for the CPU board to read.

Load cells require +5 volts DC to operate. This is known as the load cell's excitation voltage. Using the + 5 volt DC, the load cell generates a 0 - 10 millivolt signal that is returned back to the CPU board A/D input. This signal is proportional to the amount of weight on the load cells. The on board A/D (analog to digital) converters on the CPU board convert this signal to digits for the computer to read. The digits are referenced to the zero weight digit reading and the calibration weight digit reading that was input during the calibration procedure on the load cells. Based on this information, the computer determines the precise weight in the weigh hopper.

6-6-4 Output Signals from Control Panels

The OS/OA blending system uses several output control signals to control the process. All of these are very similar in nature, the first of which is the mixer motor control.

The mixer motor control is activated via a control port located on the CPU board PC-1. SSR-1 is a power relay and is sized to handle the amount of current required to drive the mixer motor on smaller units. If the mixer motor is large ("HC" style OA-030/060 only), such as on the larger models, the SSR-1 can power a second motor contactor located in the panel on the rear of the blender. (This will power the mixer from a second power line, to cut the voltage drops to the computer panel when the mix motor starts.)

Note: This is a special setup to allow operation when plant wiring to the blender cannot carry the load without voltage drops. HydReclaim recommends that an un-interruptible power supply (UPS) be installed to provide steady power for the computer circuit.

To protect this circuitry in the event of a mix motor overload, there is a control fuse mounted in the side panel of the blender.

The weigh hopper dump valve output functions similar to the mix motor output. Please refer back to the wiring diagram. The origin of the weigh hopper dump signal is a control port located on the CPU board PC-1. This signal is routed through SSR-2. SSR-2 then converts the + 5 volt DC signal to a 110 volt AC signal to drive the solenoid. The weigh hopper dump solenoid is the first valve from the left when viewing the valve stack on the rear of the OS/OA Blender.

To protect the circuitry in the event of component failure, the SSR module incorporates a built-in fuse located on the very top of the module. This fuse is properly sized to protect the SSR module.

The auger motor outputs are driven from a control port located on the CPU board. These outputs are also driven through SSR modules. These modules are SSR-3 through SSR-6. Each of these modules contains protection fuses. In the event of an auger jam or motor overload, the module fuse will protect the SSR module and the CPU board's control port.

Each OS/OA blending system comes complete with a customer alarm output. This output is driven from a control port located on the CPU board PC-1. It is routed through a solid-state relay module designated as SSR-7. The contacts on this module are rated from 20 - 220 volts AC. The module contains a fuse that is limited to 3 amps.

The customer alarm output is provided to actuate or energize a variety of alarm horns, buzzers, strobe lights, and beacons. These are normally provided by the customer, and care will have to be exercised not to exceed the maximum current draw (3 amp fuse). The contacts will close whenever the control detects a fault that will somehow inhibit the blending system from properly blending the material.

Note: The customer alarm contact is open if the panel control power is turned off.

This contact is for use with a customer supplied alarm device as described above.

The alarm contact is fused for a maximum load of 3 amps.

6-7 Pneumatic System Maintenance

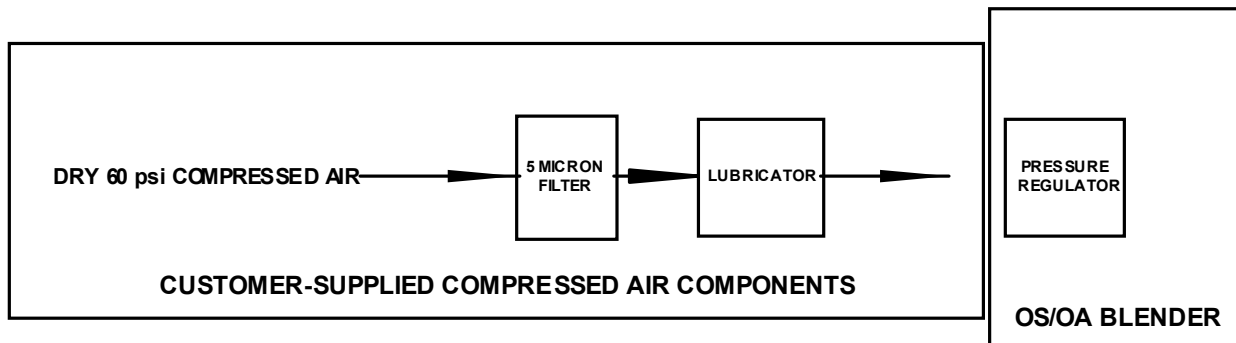
The OS/OA blending system uses plant-supplied compressed air to operate the metering and dump valves on the blender.

It is the user's responsibility to provide CLEAN AND DRY air for the blender to be connected to. The air supply should be filtered through a 5 micron air filter and have a water separator installed. Oil should not be used unless air dryers are installed on the compressed air supply. In this case, an oiler may be required on the blender to keep the air cylinder seals lubricated.

Important!



As this blender uses air for blender metering functions, it is very important to supply clean, dry air to the blender. Dirty air can affect blender accuracy, result in poor performance and cause injury. *Provide a 5-micron air filter on the air supply to the blender and be sure excess oil is removed.*



AEC/HydReclaim provides all pneumatic lines on the blender piped to a single 1/4" NPT standard pipe thread fitting. The OS/OA blending system requires approximately 1 cfm @ 60 psi (1.7 m³/hr @ 4.14 bar) air pressure for proper operation.

The working pressure of the blender cylinders is 60 psi. This is adjustable by the regulator supplied on the rear panel of the blender. (It is important that the air pressure to the blender is not fluctuating by installing the unit on an air line with other equipment using large volumes of air. If this is the case, an accumulator tank with a check valve may have to be provided by the customer to ensure the blender a steady air supply.)

WARNING!



Always disconnect the compressed air supply when working on any part of the blender.

7-1 Description and Objectives

This section provides basic troubleshooting procedures to common OS/OA blending system problems. Any problem encountered that is not listed should be discussed with an AEC/HydReclaim service technician.

Problem	Possible solution
The control display is blank.	Check the display contrast adjustment. This is located on the blender CPU board.
	Check the CPU display cable. This connects the 2-line display to the CPU.
	Check the power lamp indicator. Make sure that the blender has control power. Make sure to check the internal power indicator lamp as well.
	Check the CPU +5 VDC power supply. Make sure to check this not only at PS-1 but also at the terminal strip connections as well. Check for loose connections.
	Check out the air safety system. If any one of the safety switches is not held in, the power to the blender control will be disconnected. Check the pressure switch.
Slide gate will not open, auger will not turn.	Check the recipe to ensure that the metering device in question is included in the recipe.
	Check to make sure that the metering device is not jammed.
	Check the SSR fuse in the control panel for the proper device. This is a small plug-in fuse located on the module.
	Check the air valve for proper operation by sticking a screwdriver into the back hole of the valve's solenoid cover to manually operate the valve. If the cylinder operates on the metering unit when the coil is depressed, the problem is a loose connection or a burned-out solenoid coil.
	If the cylinder does not actuate when the solenoid coil is manually depressed, the solenoid valve is stuck or plugged up with dirt. Clean or replace.

Problem	Possible solution
Blender intermittently stops.	Check the input power. Verify that 110 volts (or 220 volts) are $\pm 10\%$. This voltage must remain constant with all the motors starting and stopping. Insure that the blender is on a “clean” circuit that does not have other equipment on it. If the power is known to be intermittent and have problems, set up the unit to run in “AutoStart” mode. See the factory setup sheet at the end of this manual. In this mode, if a short power interruption occurs, the blender will automatically restart.
	Check the DC power supply to ensure that it is outputting +5 VDC to the CPU board. If not, adjust the pot on the power supply.
	Check the voltage at the CPU board to ensure the wiring is not loose.
Display has single black line, no characters.	Check the power supply. Make sure that it has +5 VDC output to the CPU board. Adjust to +5 VDC, ± 0.1 volt.
	Check the display ribbon cable connection to the CPU board and the display. See the electrical chapter for more information.
	Check the contrast adjustment located on the display board.
Display characters are too light or too dark.	Check the display contrast adjustment located on the display board. Turn the pot wheel clockwise to darken, counterclockwise to lighten.
No keypad response.	Check keyboard ribbon cable connections.
	Check the CPU board for “lockup”. To do so, reset the CPU board by cycling the power off and on at the motor control panel.
Weigh hopper occasionally overfills.	Check batch weight setting in the recipe menu. See the setup chapter for more information.
	Check the load cells and weigh hopper mounting for binding, etc.
	Check to see that a pellet has not lodged under a load cell.
	Check the ingredient supply hoppers to verify proper ventilation. If a vacuum receiver has a leaking flapper valve and the supply hopper is not vented, the blender computer can learn inaccurately and cause an overfill condition on the next few cycles.
	Check the load cell connections to the panel by putting the unit in Diagnostics mode to check the load cell in the direct scale readout.
	Check the +5 VDC power supply. This is done on wire number 100 & 101, and should be set to +5 VDC ± 0.1 VDC. It should remain constant and not vary. If necessary adjust the voltage level using the voltage adjustment pot located on PS-1. Refer to the electrical chapter for more information.
Material tends to separate in the mixing chamber.	Check the mix timer setting. This problem is normally due to over mixing. See the mix timer section in the setup chapter. Reduce the time until the problem is corrected.
	Check the mixer drive to ensure that the agitator is turning properly.
	Check the high level switch in the mixer to lower the level slightly.

Problem	Possible solution
Blender occasionally dumps an incorrect batch.	The blender intermittently dumps a batch of material with one or more of the components incomplete.
	Check the recipe information; ensure that both the percentages and batch size are set properly.
	Check the status of the alarm flags to ensure that they are not set wrong.
	Check supply hopper ventilation.
Blender keeps dumping after mixer is full.	Check the mixer high-level switch sensitivity. When the sensor is covered by material, the indicator lamp on the back of the switch should be lit. To adjust the sensitivity, use the small adjustment screwdriver that was provided with the blender. The adjustment pot is located on the back of the sensor. Rotate clockwise to increase the sensitivity (less material in front of the switch to actuate it). Rotate counter clockwise to decrease the sensitivity (more material covering the switch).
	Check the mixer high-level sensor connection to the control panel.
Blender will not batch with empty mixer.	Check the mixer high-level switch sensitivity. Fines may have coated the level switch; it needs readjustment.
	Check the proximity switch connection.
	Make sure that the recipe is correct.
	Check batch size.
	Check the air safety system to verify that a safety switch has not tripped. Verify that the blender front indicator is green.
Mix motor does not run when batch dumps.	Check the value of the mixer timer setting.
	Check the value of the dump delay timer.
	Check the mixer motor fuse. This is located in the control panel on the SSR for the mixer motor. If the unit has two (2) power inlets with a separate power inlet for the mix motor the overload fuse will be located in the rear junction box on the blender frame.
	Check the power source to the blender.
Scale is inoperable.	Check the load cell in diagnostics under direct scale readout. Place a calibration weight on the weigh hopper; determine if the weight corresponds.
	Check the load cells to make sure that a pellet has not jammed under a load cell.
	Check the load cell connections to the control panel
	Check the power supply voltage and readjust as necessary as described earlier.
Blender loses calibration when power is interrupted.	Check the memory battery voltage on the CPU board. If the battery is dead, the blender “forgets” settings when the power is off. Replace it with a new battery. Order a spare CPU board; send the replaced one back to the factory to have a new battery holder and battery installed. If this is done in the field, <i>the controller warranty will be voided.</i>

Problem	Possible solution
Suspicious calibration.	During the weigh hopper calibration, the operator may encounter a suspicious calibration. This indicates that the calibration has varied more than 10% from the factory calibration. Recalibrate and check it again. If you are sure that the calibration is OK, then it is possible that the wrong calibration is in memory to compare to. If this is the case, press the <EOC> key to force the computer to accept the new calibration.
Weigh hopper does not empty completely.	Check the dump time setting. It may be set too short. If this does not correct the problem, clean the weigh hopper and recheck the scale diagnostics readout. If not showing (0) zero when empty, re-calibrate the scale.
Blender does not make rate.	Verify application is not exceeding blender capacity. Verify additive percentage is not higher than designed, resulting in excessive dispense time. Verify all materials are feeding freely through the metering gates or augers.

Other service problems or questions can be answered by contacting the AEC/HydReclaim Service Department.

7-2 Common Controller Error Codes

The following codes may be displayed on model OS and OA blenders:

Code	Problem	Corrective Action
236	Loadcell(s) read zero (OA or OS)	Check loadcell readings in direct scale readout (refer to "Diagnostics" section of manual)
	Control may be setup for 2 loadcells but only 1 is required (OA blender only)	Check setup parameters (refer to manual under deep diagnostics # of loadcells)
237	Some parameter that needs to be set by the customer is set to a zero value	Most common one is the batch size is set to zero
242	Trying to execute something outside of the program	Scrambled RAM chip (lift the RAM chip for a few seconds & reseal)
	Power problem	Low incoming 5 vdc to CPU (adjust output of controller power supply)

The following is a list of options, which your blender may have been equipped with:

Regrind Auger Metering (RAM)

Used for feeding difficult regrind materials.

Low Level Sensors

Detects material supply problems before blender runs out.

RCP Remote Interface

Allows control of blender from a second location up to 100 feet (30 meters) away.

Mezzanine & Floor Stands

Supports blenders in mezzanine mount and free-standing applications.

Take-off Compartments

Allows material to be metered into a vacuum conveying system.

Slide Gate below Mixer

Ensures blend homogeneity.

CL-25 Pneumatic Loader for Additives

Compressed air loader to load low percentage additives into the blender.

9-1 Recommended Spare Parts List

Optimum OS Series Gravimetric Batch Blending Systems

✓ Please see Section 9-2 for parts identification and exploded views.

Model OS-007

Part No.	Description
53292	Air Cylinder (weigh hopper dump)
53352	2kg Load Cell w/ 13" cord
35435	Pneumatic Pressure Indicator
35437	3-way Pneumatic Control Valve (Safety Switch)
10220	Mixer Agitator (Opti-Mixer)
63881	Mixer High Level Sensor
51455G	Mixer Gear Motor
35448	Slidegate Air Cylinder (3" stroke)
EWB-0535	LCD Operator Control Panel (complete)
80149	Power Supply
61-DROAC5	Output AC Module
61-DRIDC5A	Input DC Module
59643	25 amp Relay

The following parts are integral LCD operator panel components, included with EWB-0535 spare panel (complete) for all OS/OA.

Part No.	Description
61*LGX-270	CPU Board
63866	2-line LC (liquid crystal) Display
61-IOE-DGL	Digital Expander Board

Model OS-014

Part No.	Description
35450	Air Cylinder (weigh hopper dump)
55412	5kg Load Cell w/ 48" cord
35435	Pneumatic Pressure Indicator
35437	3-way Pneumatic Control Valve (Safety Switch)
10207	Mixer Agitator (Opti-Mixer)
63881	Mixer High Level Sensor
53361	Mixer Gear Motor
35448	Slidegate Air Cylinder (3" stroke)
EWB-0535	LCD Operator Control Panel (complete)
80149	Power Supply
61-DROAC5	Output AC Module
61-DRIDC5A	Input DC Module
59643	25 amp Relay

Model OS-070, OS-080 & OS-100

Part No.	Description
53243	Air Cylinder (weigh hopper dump)
53287	20kg Load Cell w/ plug
35435	Pneumatic Pressure Indicator
35437	3-way Pneumatic Control Valve (Safety Switch)
10197	Mixer Agitator (Opti-Mixer)
63881	Mixer High Level Sensor
53280	Mixer Gear Motor
53266	Slidegate Air Cylinder (5" stroke) – OS-070 only
53280	Slidegate Air Cylinder (6" stroke) – OS-100 only
EWB-0535	LCD Operator Control Panel (complete)
80149	Power Supply
61-DROAC5	Output AC Module
61-DRIDC5A	Input DC Module
59643	25 amp Relay

The following parts are integral LCD operator panel components, included with EWB-0535 spare panel (complete) for all OS/OA.

Part No.	Description
61*LGX-270	CPU Board
63866	2-line LC (liquid crystal) Display
61-IOE-DGL	Digital Expander Board

Optimum OA Series Gravimetric Batch Blending Systems

Model OA-002 (with Opti-Mixer™)

Part No.	Description
53292	Air Cylinder (weigh hopper dump)
53352	2kg Load Cell w/ 13" cord
35435	Pneumatic Pressure Indicator
35437	3-way Pneumatic Control Valve (Safety Switch)
10220	Mixer Agitator (Opti-Mixer)
63881	Mixer High Level Sensor
51455G	Mixer Gear Motor
15286	Auger Shaft Seal
11147AM	1" Feed Auger
11146AM	¾" Feed Auger
11145AM	½" Feed Auger
51444	71 RPM Feeder Gear Motor
51486	95 RPM Feeder Gear Motor
53404	240 RPM Feeder Gear Motor
EWB-0535	LCD Operator Control Panel (complete)
80149	Power Supply
61-DROAC5	Output AC Module
61-DRIDC5A	Input DC Module (Opti-Mixer)
61-DRIAC5	Input AC Module (Classic HC-Mixer; Model 400HC)
59643	25 amp Relay

Operator Panel Components

Part No.	Description
61*LGX-270	CPU Board
63866	2-line LC (liquid crystal) Display
61-IOE-DGL	Digital Expander Board

Model OA-012

OA-012 Opti-Mixer™

Part No.	Description
35450	dump cylinder
35463	valve stack(1)
53360	5kg loadcell
35435	pressure indicator
35437	safety control valve
10207	mix agitator
63881	mix hi-level
53361	1/6hp mix motor
55212	2-amp fuse
EWB-0535	operator panel
80149	power supply
61-DROAC5	output module
61-DRIDC5A	input module
59643	25 amp relay
61*LGX-270	cpu bd
35463	coupling body (air)

OA-012 rotary (HC) mixer

33126	dump cylinder
33138	dump valve
55346	10KG loadcell
55347	safety switch assy
08841	mix agitator
55348	mix hi level
51253	mixer gear reducer
51353ME	1/2hp mix motor
61-3AB10	10-amp fuse
15370	dump cone
80151	power supply
59643	25 amp relay
61-DRIAC5	input module
61-DROAC5	output module
61*LGX-270	CPU bd
EWB-0460	control panel
15286	mix motor shaft seal
15241	frame gasket
15239	wrap/door gasket

OA 012 common feeder components

51450G	1/15hp 70rpm
51449G	1/15hp 97 rpm
51453G	1/15hp 139 rpm
08236-1	3/4" auger
08237-1	1" auger
08238-1	1-5/8" auger
08239-1	2" auger

Model OA-030

OA-030 Opti-Mixer™

Part No.	Description
53243	dump cylinder
35476	valve stack(5)
53287	20kg loadcell
35435	pressure indicator
35437	safety control valve
63881	mix hi-level
53280	1/2hp mix motor
55216	10-amp fuse
EWB-0535	operator panel
80149	power supply
61-DROAC5	output module
61-DRIDC5A	input module
59643	25 amp relay
61*LGX-270	cpu bd
35463	coupling body (air)

OA-030 rotary (HC) mixer

33126	dump cylinder
33138	dump valve
55349	20KG loadcell
55347	safety switch assy
55348	mix hi level
51415	mixer gear reducer
51354	1hp mix motor
61-3AB10	10-amp fuse
15209	dump cone
80151	power supply
59643	25 amp relay
61-DRIAC5	input module
61-DROAC5	output module
61*LGX-270	CPU bd
EWB-0460	control panel
15286	mix motor shaft seal
15241	frame gasket
15239	wrap/door gasket

OA 030 common feeder components

51450G	1/15hp 70rpm
51449G	1/15hp 97 rpm
51453G	1/15hp 139 rpm
08236-1	3/4" auger
08237-1	1" auger
08238-1	1-5/8" auger
08239-1	2" auger
51440G	1/6hp 156rpm
08317-1	3" auger
08318-2	3-1/2" auger

Model OA-060

OA-060 Opti-Mixer™

Part No.	Description
53243	dump cylinder
35476	valve stack(5)
53287	20kg loadcell
35435	pressure indicator
35437	safety control valve
63881	mix hi-level
53280	1/2hp mix motor
55216	10-amp fuse
EWB-0535	operator panel
80149	power supply
61-DROAC5	output module
61-DRIDC5A	input module
59643	25 amp relay
61*LGX-270	cpu bd
35463	coupling body (air)

OA-060 rotary (HC) mixer

33126	dump cylinder
33138	dump valve
55357	30KG loadcell
55347	safety switch assy
55348	mix hi level
51415	mixer gear reducer
51354	1hp mix motor
61-3AB10	10-amp fuse
15209	dump cone
80151	power supply
59643 2	25 amp relay
61-DRIAC5	input module
61-DROAC5	output module
61*LGX-270	CPU bd
EWB-0460	control panel
15286	mix motor shaft seal
15241	frame gasket
15239	wrap/door gasket

OA 060 common feeder components

51450G	1/15hp 70rpm
51449G	1/15hp 97 rpm
51453G	1/15hp 139 rpm
08236-1	3/4" auger
08237-1	1" auger
08238-1	1-5/8" auger
08239-1	2" auger
51440G	1/6hp 156rpm
08317-1	3" auger
08318-2	3-1/2" auger

9-2 Model OS/OA Blender System Component Description

This section describes the various components of the blending system. The HydReclaim OS/OA blending system is made up of the following components:

- ***Ingredient Supply Hoppers***
- ***Ingredient Weigh Hopper***
- ***Ingredient Metering Slide Gate Assemblies (OS Series)***
- ***Ingredient Metering Transport Auger Assemblies (OA Series)***
- ***Rotary Mixer***
- ***Computer Control Panel***

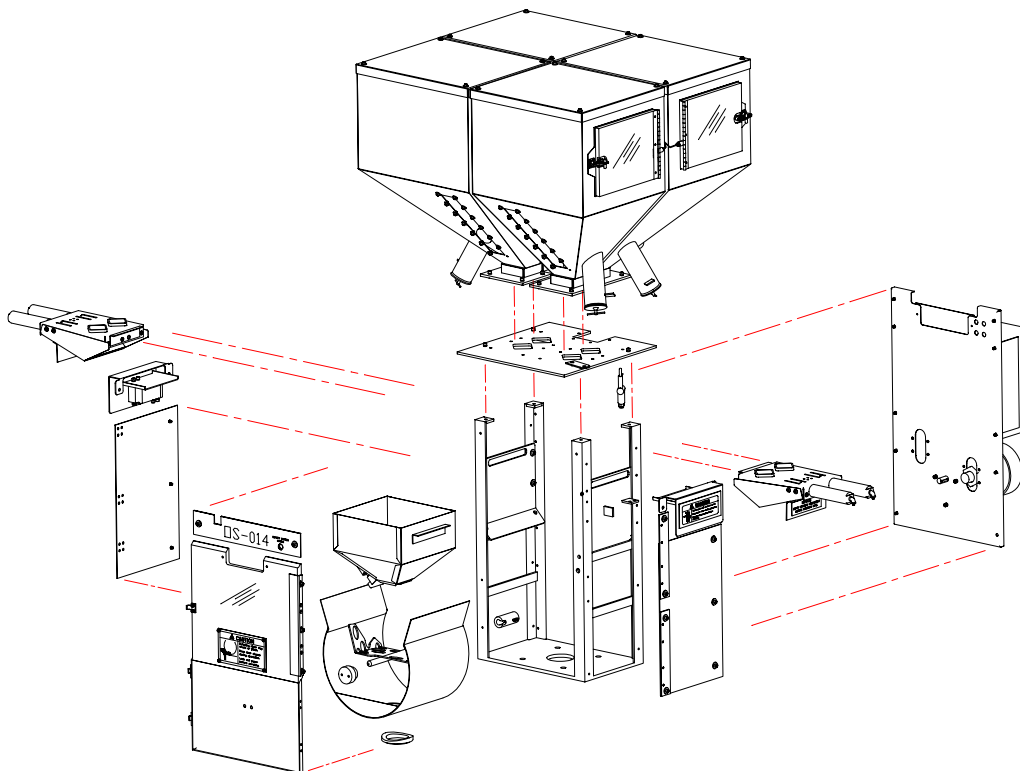
9-2-1 Overview

Component Identification and Location

This section will familiarize the reader with the components of the HydReclaim OS/OA blending system. After reading this section, the reader will be able to:

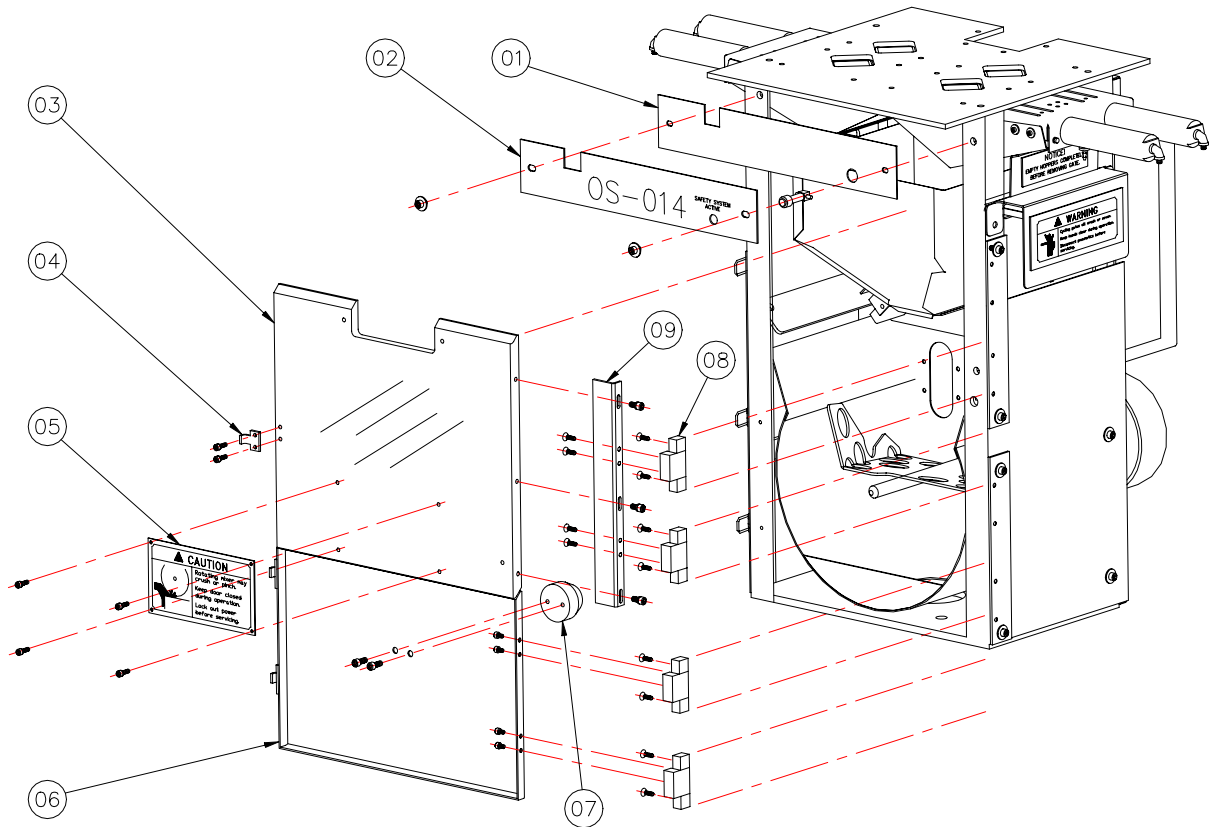
- ***Identify the individual common components of the OS/OA blending system.***

Typical Model OS Assembly Overview



9-2-2 Typical Mixer Section (Front)

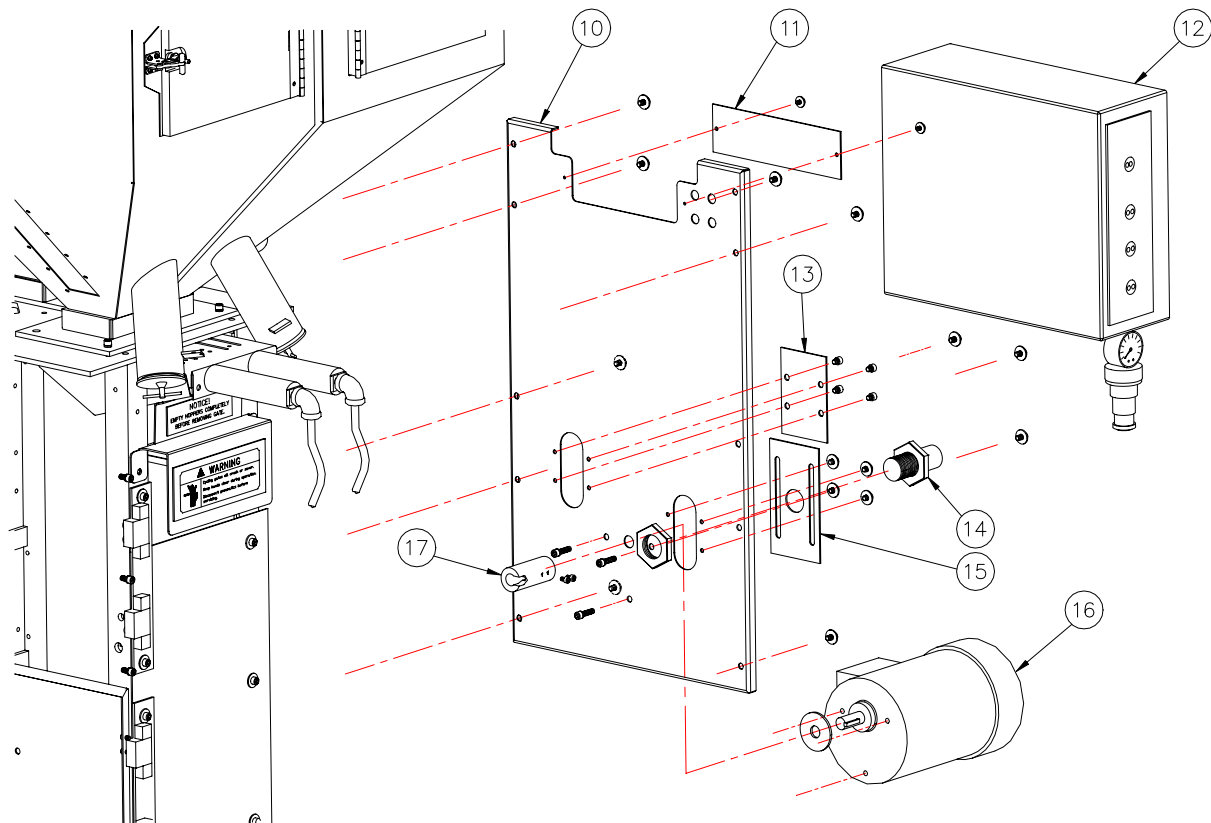
Typical Opti-Mixer™ - Front Assembly Detail



- 01 Nameplate and indicator mounting plate
- 02 Nameplate
- 03 Upper polycarbonate Opti-Mixer™ door
- 04 Door clamp
- 05 "Caution" label
- 06 Lower stainless steel Opti-Mixer™ door
- 07 Mixer agitator door bushing
- 08 Door hinge
- 09 Door hinge base

9-2-3 Typical Mixer Section (Rear)

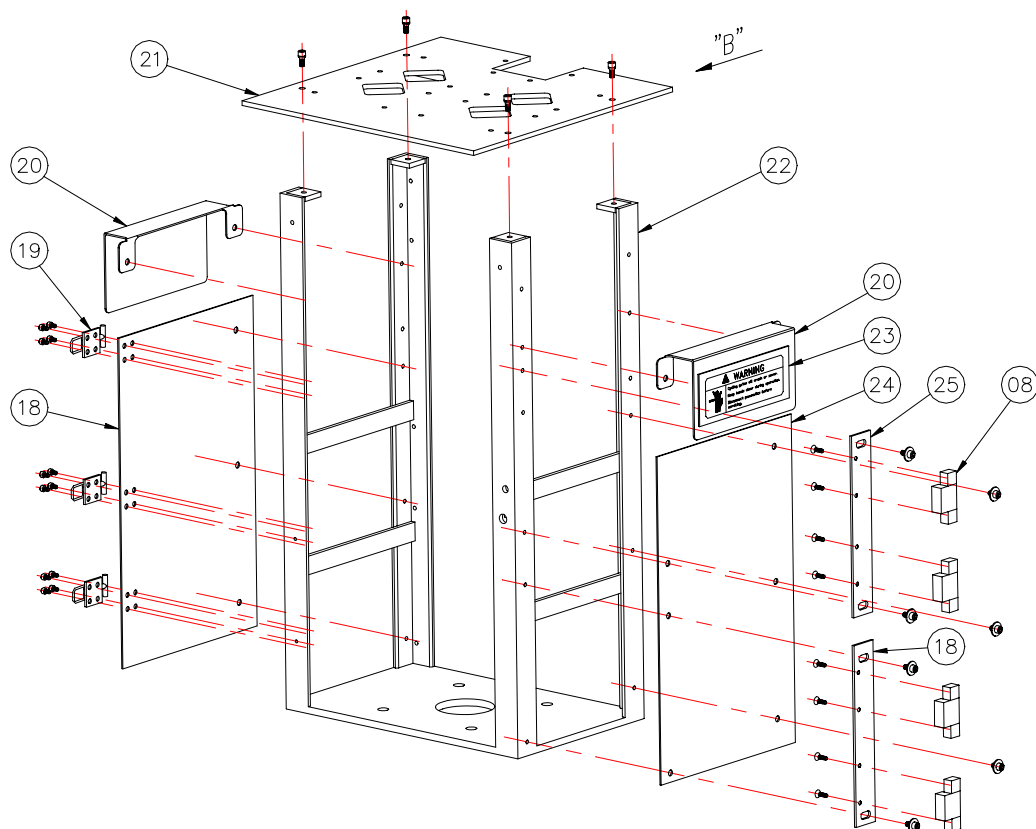
Typical Opti-Mixer™ - Rear Assembly Detail



- 10 Opti-Mixer™ back plate
- 11 Cover plate
- 12 Back control panel
- 13 Cover plate
- 14 Proximity sensor (Mixer “high” level)
- 15 Mixer proximity sensor mounting plate
- 16 Mixer gear motor
- 17 Mixer agitator shaft coupling

9-2-4 Typical Mixer Frame

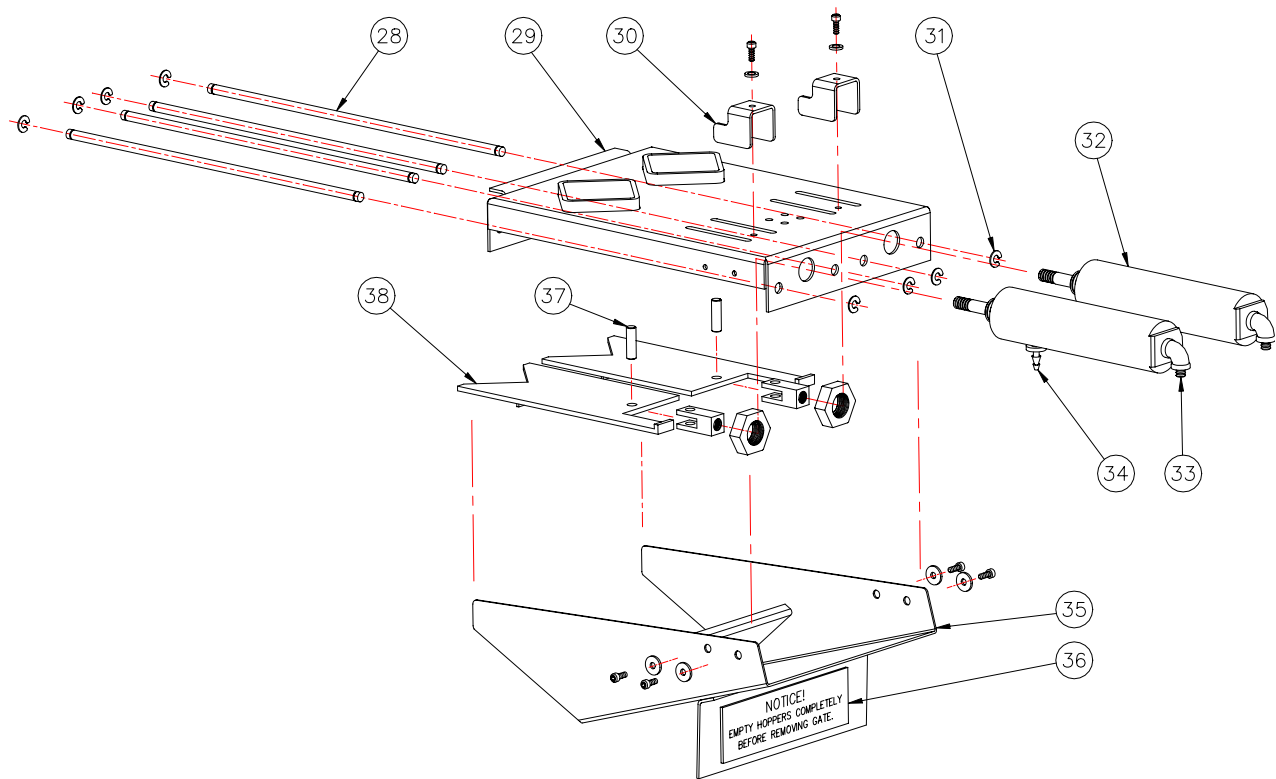
Typical Opti-Mixer™ Frame Assembly



- 18 Hinge mounting bracket
- 19 Mixer door clamp
- 20 Load cell cover
- 21 Opti-Mixer™ top plate
- 22 Opti-Mixer™ frame
- 23 Warning label
- 24 Opti-Mixer™ frame side panel
- 25 Hinge mounting bracket

9-2-5 Typical Gate Assembly

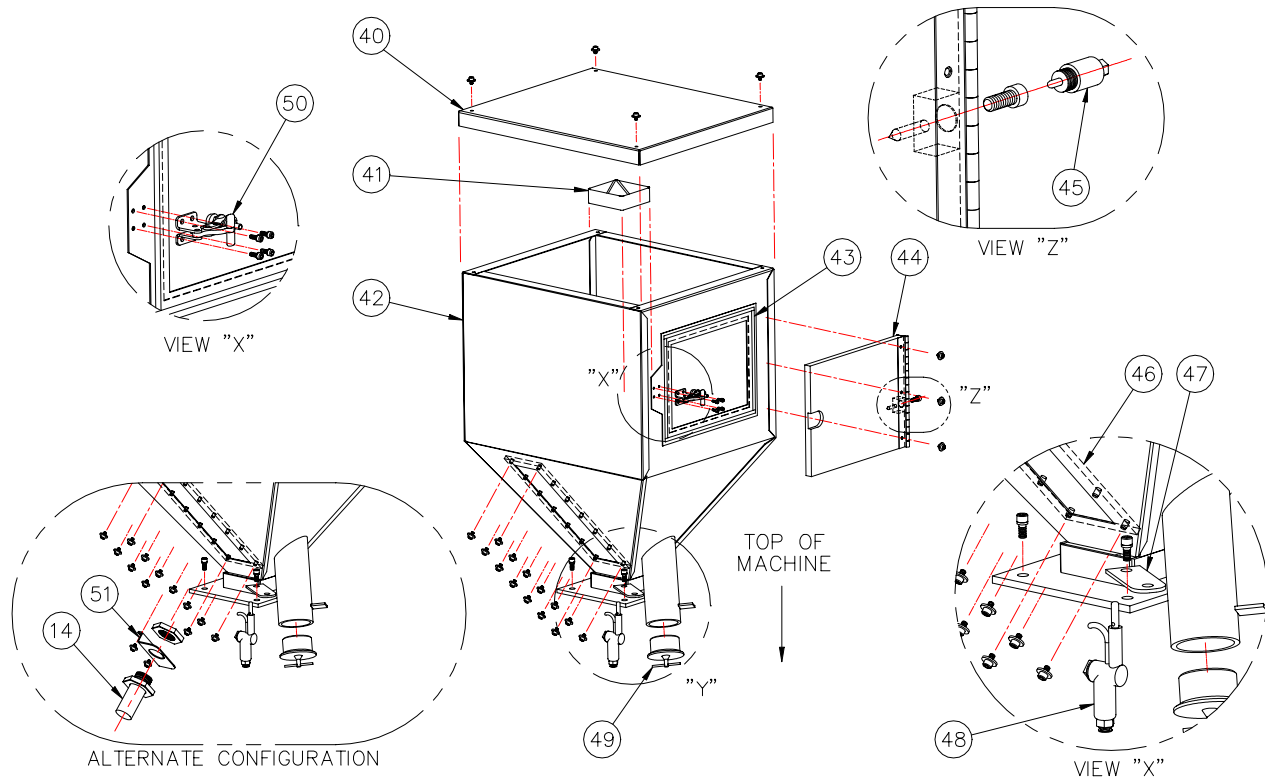
Typical OS Series Diamond Gate Assembly Detail



- 28 Slide gate guide rod
- 29 Stainless steel gate assembly base
- 30 Slide gate stop (stroke-limiter)
- 31 Retaining clip
- 32 Slide gate air cylinder
- 33 Slide gate air cylinder pneumatic connector fitting
- 34 Slide gate air cylinder pneumatic barb fitting
- 35 Slide gate assembly material chute (deflector)
- 36 Notice (warning) label
- 37 Pin
- 38 Diamond v-gate (metering slide gate)

9-2-6 Typical Supply Hopper

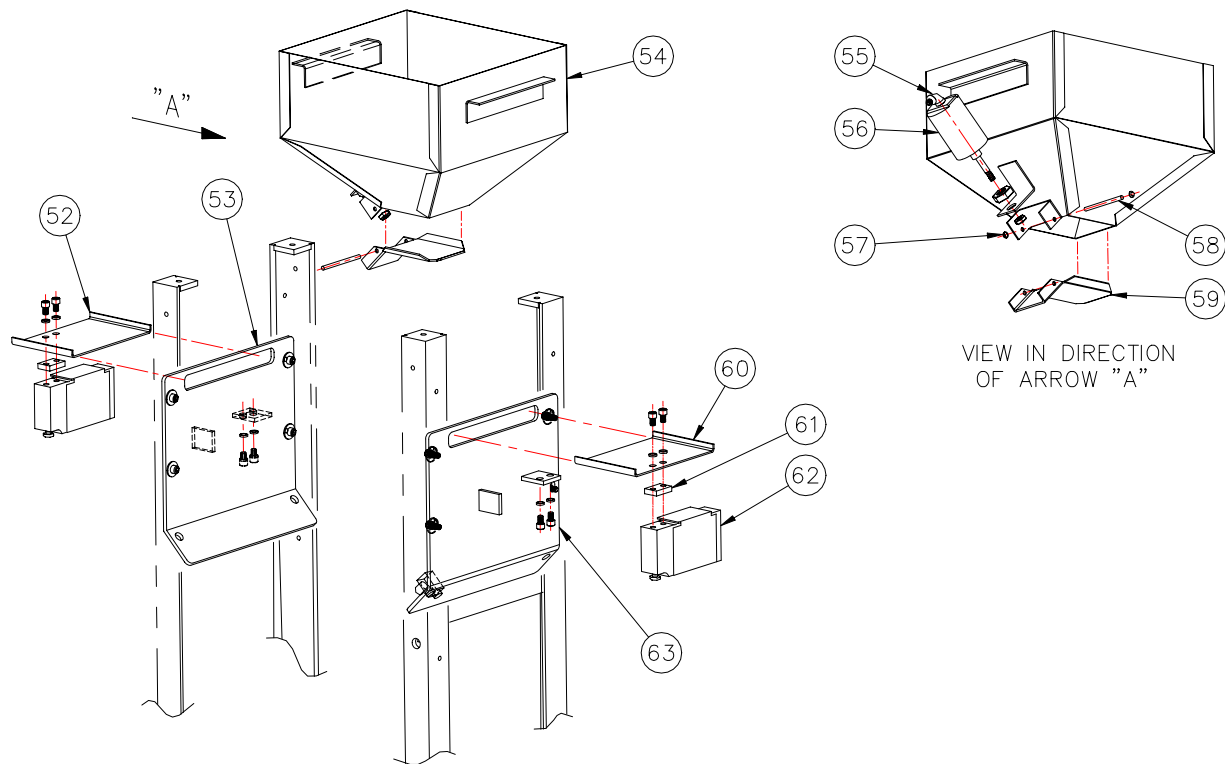
Typical OS-014 Series Hopper Assembly Detail



- 40 Mild steel hopper cover
- 41 Hopper insert (square to diamond-polyurethane)
- 42 Mild steel hopper
- 43 Gasketing
- 44 Polycarbonate access door
- 45 Access door safety switch
- 46 Polycarbonate hopper sight glass
- 47 Blow-off tool holder
- 48 Blow-off tool
- 49 Drain plug
- 50 Cleanout door clamp
- 51 Optional low level proximity sensor mount

9-2-7 Typical Weigh Hopper

Typical Weigh Hopper & Load Cell Detail



- 52 Left weigh hopper bracket
- 53 Inside mixer plate
- 54 Weigh Hopper
- 55 Weigh hopper discharge air cylinder pneumatic connector
- 56 Weigh hopper discharge air cylinder
- 57 Weigh hopper discharge air cylinder mounting bracket
- 58 Weigh hopper discharge hinge pin (bolt)
- 59 Weigh hopper discharge flapper
- 60 Right weigh hopper bracket
- 61 Spacer
- 62 Load cell(s)
- 63 Load cell mounting plate

10-1 Contact Information for Technical Assistance**Parts Department**

Call toll-free 8am-5pm CST [800] 423-3183

Parts shipped from the Wood Dale, IL facility available for Next Day Air shipment up to 4 pm EST.

The AEC/HydReclaim Parts Department is ready to provide the parts to keep your systems up and running. HydReclaim OEM replacement parts ensure operation at design specifications. Please have the model and serial number of your equipment when you call. Consult the Recommended Spare Parts List, included in this manual, for replacement part numbers.

**Service Department**

Call toll-free 8am-5pm CST [800] 233-4819 or call [630] 595-1060

AEC/HydReclaim has a qualified service department ready to help. Service contracts are available for most AEC/HydReclaim products.

**Sales Department**

Call 8am-5pm EST [810] 720-7300

Call 8am-5pm CST [630] 595-1060

AEC/HydReclaim products are sold by a worldwide network of independent sales representatives. Contact our Sales Department for the name of the sales representative nearest you.

**Contract Department**

Call 8am-5pm CST [630] 350-7283

Let AEC/HydReclaim install your system. The Contract Department offers any or all of these services: project planning; system packages including as-built drawings; equipment, labor, and construction materials; union or non-union installations; and field supervision.



AEC/HydReclaim, Inc.
801 AEC Drive
Wood Dale, IL. 60191-1198 USA
Hours: 8:00 am to 5:00 PM CST

10-2 Returned Material Policy

10-2-1 Credit Returns

1. Prior to the return of any material **authorization** must be given by **AEC, INC.** A RMS number will be assigned for the equipment to be returned.
2. Reason for requesting the return must be given.
3. ALL returned material purchased from **AEC, INC.** returned is subject to 15% (\$75.00 minimum) restocking charge.
4. ALL returns are to be shipped prepaid.
5. The invoice number and date or purchase order number and date must be supplied.
6. No credit will be issued for material that is not within the manufacturer's warranty period and/or in new and unused condition, suitable for resale.

10-2-2 Warranty Returns

1. Prior to the return of any material, authorization must be given by **AEC, INC.** A RMS number will be assigned for the equipment to be returned.
2. Reason for requesting the return must be given.
3. All returns are to be shipped prepaid.
4. The invoice number and date or purchase order number and date must be supplied.
5. After inspecting the material, a replacement or credit will be given, at **AEC's** discretion. If the item is found to be defective in materials or workmanship, and it was manufactured by **AEC, INC.**, purchased components are covered under their specific warranty terms.

10-3 Warranty

AEC, Inc. warrants all equipment manufactured by it to be free from defects in workmanship and material when used under recommended conditions. The Company's obligation is limited to repair or replace FOB the factory any parts that are returned prepaid within one year of equipment shipment to the original purchaser, and which, in the Company's opinion, are defective. Any replacement part assumes the unused portion of this warranty.

This parts warranty does not cover any labor charges for replacement of parts, adjustment repairs, or any other work. This warranty does not apply to any equipment which, in the Company's opinion, has been subjected to misuse, negligence, or operation in excess of recommended limits, including freezing or which has been repaired or altered without the Company's express authorization. If the serial number has been defaced or removed from the component, the warranty on that component is void. Defective parts become the property of the warrantor and are to be returned.

The Company is not liable for any incidental, consequential, or special damages or expenses. The Company's obligation for parts not furnished as components of its manufactured equipment is limited to the warranty of the manufacturers of said parts.

Any sales, use, excise, or other tax incident to the replacement of parts under this warranty is the responsibility of the purchaser.

The company neither assumes nor authorizes any other persons to assume for it any liability in connection with the sale of its equipment not expressed in this warranty.

Many types of AEC, Inc. equipment carry an additional one-year service policy. Consult your AEC sales representative for specific details.

11-1 OS/OA Blender Safety Tags



**Pinch Point
Slide Gate**



**Read Operation
and Installation
Manual**



**Shear Point
Rotating Mixer**



Earth Ground



**High Voltage
Inside Enclosure**



**Protected Earth
Ground**

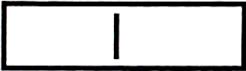


**Shear Hazard
Rotating Auger**



Lifting Point

11-2 Pushbutton and Keypad Tags

<u>Button</u>	<u>Function</u>
 Power On	Turns power on to the blender.
 Power Off	Turns power off to the blender.
	Stops blender & re-starts controller.
	Move back one level in controller function.
	Move forward one level in controller function.
	Start blender with current program parameters.
	Erase current settings.
	Stops blender operation after current batch is completed.

11-3 Blender Identification (Serial Number) Tag

(Located on back of mixing chamber)

	
CE <i>Optimum Series Blender</i>	
Model Number OS-014E	
Max Blend Capacity 318 KG/HR	
220V	Serial Number 060701R
1Ø	Date of Manufacture 06/2002
4.5A	
Over-current Protection Device (s) 4.5A Total	
Frequency 50/60Hz	
Compressed air supply 4.14 bar (60 psi)	
Mixer Speed 16 RPM	
Blender Mass 400 lbs/(180 KG)	
Electrical Diagrams EWB-0624 & EWB-0535	
Pneumatic Diagram A0770035	
801 AEC Drive	Wood Dale, Illinois USA
(630) 595-1060	

Important! Hidden, programmable switches and hidden menu pages should not be made available to floor operators. These pages include the Service Supervisor Information addendum located in this section. Unauthorized changes to these factory settings by inexperienced operators may prevent the OS/OA unit from operating properly, and may void part or all of the warranty.



12-1 Addendum Service Supervisor Information

Note: Should not be used by untrained personnel – blender controller and/or program can be compromised!

12-1-1 Programmable Switches

OS/OA

The OS/OA Series blender software program has been designed to allow some customizing to achieve certain desired operating parameters. The following is a listing of the selections that are “field” programmable, followed by the procedure for doing so.

This menu is entered by pressing the <0> key when in the “Diagnostics” menu.

Enter the long password “3145348” and press <Enter>. The factory setup section displays. Press the <BACKUP> key for the display similar to that shown below and use the keystrokes described herein to change or toggle the parameters.

**LDC#2 MENU Lbs PRTR:ON
LKR BRDY HPR**

12-1-2 Factory Setup Menu

Available Selections

LDC#	This switch indicates the number of load cells used in the blender. <i>To toggle between 1 or 2 load cells, press the <1> key.</i> <u>MENU</u> Selecting 'MENU' causes the blender to return to the (1) Startup Menu after a power failure. The operator is required to restart the blender manually.
AUTO	Selecting 'AUTO' causes the blender to automatically restart after a power failure or brownout. <i>To toggle between MENU and AUTO, press the <2> key.</i>
<u>Lbs</u> Kgs	Select 'Lbs' for the blender to operate in and display pounds. Select 'Kgs' for the blender to operate in and display kilograms. <i>To toggle between pounds or kilograms, press the <3> key.</i>
PRTR: ON/OFF	A printer can be connected to the control panel of the blender to print information either on a batch or a time basis. To enable printing, turn ON the PRTR switch. If no printer is connected, make sure that this switch is turned OFF so that the blending process is not slowed down. <i>To toggle this feature on and off, press the <4> key.</i>
LKR LKD LKRD PSWD None	This switch is used when the blender is equipped with a hardware keylock (optional) or if certain menus are to be disabled with a simple password for protection. If the hardware keylock is installed:
LKR	Prevents/disables access to the Recipe menu.
LKD	Prevents/disables access to the Diagnostic menu.
LKRD	Prevents/disables access to the Recipe and Diagnostics menus.

Simple password protection:

PSWD Access to Recipe and Diagnostics menus are available only through a password, set by using Option 7 in the first-level diagnostics screen.

To toggle between the different options, press the <5> key.

BRDY This mode permits the blender to pre-weigh a batch of ingredients and hold them in the weigh hopper until the mix hopper level switch is uncovered. The ingredients will immediately dump after the level switch uncovers. This eliminates a delay in making the batch before dumping. The customer decides whether to run the unit in this mode. If the blender is shaking (say, on an injection molding machine), the weigh hopper load cells can be fatigued over time by constantly holding weight in the weigh hopper. This is also referred to as batch ready mode.

This condition is not covered by the warranty.

To toggle this feature on and off, press the <6> key.

Programmable Switches (continued)

After all selections are made:

- Press the <Backup> key.
The “Factory Setup Saved” message displays and the unit automatically returns to the first level of the diagnostics menu.
- Press the <Backup> key (again) to return to the Run menu.

Important!



Programmable switches should not be accessed by inexperienced operators or inexperienced plant personnel. Unauthorized changes may prevent the blender from operating properly and may void part or all of the warranty.

Call the AEC/HydReclaim Service Department for assistance or for further explanation of these or any other programmable switches, which may or may not be shown in this manual.

Information included in this manual is subject to change without notice.

Note: Blender default password is “5413”